DS #: 5291

APN: 139-31-111-010

PROJECT: Meadows Multifamily

SUBMITTAL: 1st

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: July 15, 2020
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: **Meadows Multifamily**			**COPIES TO:** Wood Rodgers, Inc.
Cross Streets:	NEQ of Meadows Lane & Decatur Blvd.			Meadows Owner, LLC
File Number:	F:\Depot\DSMemos\DS5291A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	139-31-111-010			
Zoning Action:	SDR-76721 & VAR-76720			
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	6/25/2020 (Paid on 6/29/2020)	7/14/2020	See Comments Below	$400.00	3897262: $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 (**SDR-76721 & VAR-76720**) 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. **Standard Form 1**: The listed assessor's parcel number (APN) is incorrect. Revise in the next submittal.

3. The "***2018 MPU Watershed Map***" has not been included in the technical drainage study. Provide as such in the next submittal.

4. ***Figure 4 (Existing Condition Drainage Map):*** A site visit by the reviewer revealed that a concrete flume is located at the southeast corner of **ONX2**.

   However, **OND7** in the developed condition moved the discharge point about 200' to the north. Why not use the existing concrete flume? If the engineer/developer maintains the revised location of discharge point, obtain a notarized letter of acknowledgment from the adjacent property owner prior to the final approval of the subject drainage study.

5. ***Figure 5 (Developed Condition Drainage Map)***: **Basin OFD1** cannot be located on the map. Clearly identify the location of OFD1 in the next submittal.

6. In **Chapter 3.2 (Ultimate Developed Drainage Condition)**, Offsite: quote: "*Runoff from the future offsite basin OFD1 combines with flow from the developed onsite basin OND1 and OND2 at Combination Point CPD1 in Meadow Lane at the southeast corner of the Project.*" – end quote.

   However, **CPD1** cannot be identified anywhere on the drainage map, instead **CPD3** and **CPD4** were shown. Also logically, is there a **CPD2** and where is it? Address and resolve in the next submittal.

7. **Chapter 5 (Onsite Parking Lot Storm Water Treatment)**: Per Table 6, the area of **AREA-5** is 1.04 acre, explain why it is not treated for BMP?

8. Two drop inlets are proposed to connect to an existing storm drain in *Meadows Lane*. The existing storm drain is 24"- diameter and may not have the capacity to accept the onsite flows. Provide hydraulic calculations to verify the effectiveness of the proposed storm drain system.

9. Provide storm drain manhole at each of the lateral connection location to the mainline storm drain in *Meadows Lane*.

10. *City of Las Vegas* does not allow HDPE pipe in public right-of-ways or public drainage easements. Note that *City of Las Vegas* only allows the use of HDPE storm drain pipes for privately owned and privately maintained storm drain systems which serve and are located exclusively on private properties. Any proposed HDPE storm drain pipes must also meet all design criteria established by the *Clark County Regional Flood Control District* and must be installed per *Clark County Regional Transportation Commission Uniform Standard Drawings and Specifications*.

11. Identify the existing storm drain in *Meadows Lane* and label with ***City of Las Vegas*** recorded drawing number on the grading plan.

12. Provide a note on the grading plans: All onsite storm drains and the associated facilities are Privately Owned and to be Privately Maintained by the property owner.

13. 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: T21S/R60E/31
AREA M-31

Technical Drainage Study

for

Meadows Multifamily

Meadows Ln @ Meadows Mall St Project

Prepared For

Meadows Owner, LLC

9555 Hillwood Dr. Ste 110

Las Vegas, NV 89134

Prepared By

WOOD RODGERS

BUILDING RELATIONSHIPS ONE PROJECT AT A TIME

June 2020

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: **Meadows Multifamily** Date: 6/8/2020

Location of Development: a) West of Meadow Mall

b) Section: **35** Township: **21 South** Range: **60 East**

C) APN: **163-35-401-010, 027 & 028**

Name of Owner : Meadows Owner, LLC

Telephone Number: 702-545-0355 Fax No: 702-545-0987 **Email Address: PF@trudevco.com**

Address: 9555 Hillwood Dr. Ste 110, Las Vegas NV, 89134

Contact Person Name: **Jesse J. Patchett, P.E., CFM** **Telephone Number: (702) 790.5530**

*** Email Address** jpatchett@woodrodgers.com **Fax Number: (916) 341-7767**

Firm: Wood Rodgers, Inc.

Address: 2190 East Pebble Road STE 200, Las Vegas, NV 89123

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	**X**	**Building Permit**		

1. Total Owned Land Area: At Site: **± 9.63 Ac** Being Developed: **±9.63 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.)? **Commercial / Industrial Warehouse**
5. Approximate upstream land area which drains to the subject site? **None**
6. Has the site drainage been evaluated in the past? Yes ☐ No ☒

   IF Yes, Please identify documentation:
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:

   Meadows Ln
8. Briefly describe your proposed schedule for the subject project: **As Soon As Possible**

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.**

_____

Local Entity File No.

Revision	*Date*

REFERENCE: **STANDARD FORM 1**

updated 05/01/2008

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Meadows Ln @ Meadows Mall St Project	Map ID:	
Firm Name: Wood Rodgers, Inc.	Engineer: Jesse J. Patchett, P.E., CFM	
Address: 2190 East Pebble Road, Suite 200		
City: Las Vegas	State: NV	Zip: 89123
Phone Number: (702) 790.5530	Fax Number: (916) 341.7767	
Property Owner: Meadows Owner, LLC		
9555 Hillwood Dr. Ste 110		
City: Las Vegas	State: NV	Zip: 89134
Revised By:	Date Received:	Date Accepted for Review:

The following checklist is intended as a guide for the engineer preparing a Technical Drainage Study to submit to the local entity and Clark County Regional flood Control District (if necessary). The listed items are the minimum information required prior to the entity performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the Clark County Regional Flood Control District (CCRFCD) Hydrologic Criteria and Drainage Design Manual (HC&DDM).

This document is intended as an aid in preparing Technical Drainage Studies. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use.

If items are not applicable for the subject site, provide N/A.

I. GENERAL REQUIREMENTS

Yes	No	
X		Design Manual **Standard Form 1** with the engineer's seal and signature.
X		Design Manual **Standard Form 4**.
X		2 copies of the 24" x 36" Drainage Plan.
N/A		A notarized letter from the adjacent property owner(s) allowing off-site grading or discharge.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS

YES	NO	
X		A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
X		A copy of the current CCRFCD Master Plan Update Figure, for Flood Control Facilities and Environmental areas with the site delineated.
X		Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.
X		On-site drainage basin maps for existing and proposed conditions showing the existing topography, basin boundaries, concentration points, and on-site and off-site flows in cfs.
X		Vicinity Map with local and major cross streets identified and a north arrow.

III. DRAINAGE PLAN

YES	NO	
X		Sheet size: 24” x 36” sealed by a registered engineer in the State of Nevada
X		Minimum scale: 1”=60’
X		Project Name.
X		Vicinity Map with local and major cross streets.
X		Revision box.
X		North arrow and bar scale.
X		Engineer’s /consultants address and phone number.
X		Elevation datum and benchmark.
X		Legend for symbols and abbreviations.
X		Cut/fill scarps, where applicable.
X		Street names, grades, widths.
X		Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.
X		Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

YES	NO	
X		Minimum finished floor elevations with top-of-curb elevations at upstream end of lot.
X		Proposed typical street sections.
	N/A	Streets with offset crowns.
X		Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes.
X		Property lines.
X		Right-of-way lines and widths, existing and proposed.
X		Existing improvements and their elevations.
X		Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
X		Concentration points and drainage flow direction with Q_{100} and V_{100} and D_{100} in streets.
X		Cumulative flows, velocity, and direction of flow at upstream and downstream ends of site for the 10-year and 100-year flows.
X		Location and cross-section of street capacity calculations.
X		Cross-sectional detail for channels, including cutoff wall locations.
X		Existing and proposed drainage facilities, appurtenances, and connections (i.e., sidewalk, ditches, swales, storm drain systems, unimproved and improved channels, and culverts, etc.) stating size, material, shape, and slope with plan and profile and HGL calculations.
X		Existing and proposed drainage easements and widths shown with sufficient detail. A cross sectional detail must be provided that shows appropriate lining and reinforcement.
	N/A	Location and detail of existing, proposed, and future block wall openings. Minimum size is 16" x 48". Wrought iron gate is required for flows > 10 cfs.
	N/A	Location and detail of flood walls illustrating depth of flow, proposed grouting height, etc.
X		Perimeter retaining wall locations. All existing and proposed walls (retaining screen and flood) must be shown with adjacent ground elevations. Flood walls with 8-inch concrete masonry unit.
X		Building and/or lot numbers.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

YES	NO	
X		Alignment of all existing, proposed, or future Regional Facilities adjacent to the site. Facilities are not listed as Regional.
	N/A	Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.
	N/A	For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table. Finish floor elevations must be a minimum of 18 inches above BFE. N/A
	N/A	Appropriately elevated "humps" 6 inches above the 100 year water surface elevation at site accesses where the intent is to protect the site from the Q_{100} flows.
X		Street slopes for perimeters and interior streets. The minimum slope is 0.4 percent.
X		Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. Hydrologic Analysis

X	Appropriate soil information for existing and future conditions.
X	Input and output information for existing conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X	Input and output information for future conditions from computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models.
X	Use of correct precipitation values in and around the McCarran Airport rainfall area.
X	A discussion in the text of the hydrologic analysis justifying sub-basin boundaries and cutoffs, supporting assumptions, and calculations.
X	A summary table of stormwater flows showing basin area, Q10 and Q100 for both individual basins and combined basin flows, where applicable.
X	Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
X	On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent owners in accordance with current Nevada Drainage Law.
X	Calculations for impervious area for parking lots and LIDs (if required)

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

V. HYDRAULIC ANALYSIS

YES	NO	
	N/A	Flow split calculations and supporting documentation or reference for the method of flow split calculations used.
X		Normal depth street flow calculations and cross section diagrams for all interior and perimeter street. Provide "d x v" products for the Q_{100} and Q_{10} flows representing the worst case for interior and all perimeter streets. Q_{100} d x v $\leq$8. Q_{10} d x v $\leq$ 6 and 12 foot dry lane for rights-of –way $\geq$ 80 feet. Calculations must be labeled by street name as indicated on the Grading Plan.
X		A summary table of interior and exterior street capacity calculations showing the street name, Q_{100} flow, slope, depth of flow, velocity and depth times velocity product and streets needing to meet 12 foot dry lane criteria.
	N/A	Appropriate hydraulic calculations for block wall openings assuming a 50 percent vertical clogging factor. (Assume the lower half of the opening is plugged.)
X		Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set finish floor elevations. Hydraulic calculations must include submerged weir, super elevation and tee intersection losses, where appropriate.
X		Provide necessary freeboard requirements to set the finished floor elevations of all proposed buildings, 2 x depth of flow or depth of flow plus 18 inches of freeboard, whichever is less. The minimum requirement is 6 inches above adjacent upstream top of curb. Buildings adjacent to drainage easements must always be provided with 18 inches of freeboard above the Q_{100} weir height or flow depth, which ever is greater.
	N/A	A complete water surface profile analysis (HEC-2, HEC-RAS, etc.) for channel flows and FEMA Zone A flood zones. - Field survey data. - Input and output information. - Plotted cross-sections based on survey with proper encroachments. - A map showing the location of the cross-sections. - Analysis of both sub and super-critical flow segments. - A summary table and a discussion of the results in the text of this report.
	N/A	Provide a 50 percent clogging factor in the capacity calculations for drop inlets.
X		Hydraulic calculations for culverts and storm drains. D-load calculations must be provided for storm drain pipes in public right-of-way, including headwater pool inundation.
X		The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.
X		Provide BMP type, size and supporting calculations for parking lots and LIDs (if required).

REFERENCE:	**STANDARD FORM 2**

CITY OF LAS VEGAS

MINIMUM DRAINAGE STUDY CRITERIA
STANDARD FORM 2 CHECKLIST SUPPLEMENT

(Revised 5/18/11)

The following checklist is intended as a supplemental guide for the engineer preparing a Technical Drainage Study submittal to the City of Las Vegas. This supplement focuses on requirements specific to the City of Las Vegas. The requirements presented are in addition to the Clark County Regional Flood Control District (CCRFCD) Manual Standard Form 2. The listed items are the minimum information required prior to the City performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the CCRFCD Hydrologic Criteria and Drainage Design Manual (Design Manual).

An appointment must be made to preview this checklist in conjunction with CCRFCD Standard Form 2 prior to the City accepting a new drainage study for review. The engineer must contact the Flood Control Section at (702) 229-6541 to schedule a submittal appointment.

If items are not applicable for the subject site, provide N/A.

I. GENERAL REQUIREMENT		
Yes	No	
	N/A	A notarized letter from the adjacent property owner(s) allowing off-site grading. (A copy of the letter must be received prior to final acceptance of the drainage study.)
✓		Copies of all conditions of approval for development related to this property. (e.g. zoning, use permit, tentative map, etc.) Verify compliance with conditions.
✓		An electronic copy of the complete submittal is required to be submitted with one original hard copy of the study. Electronic documents should be on a universal computer-readable digital output device replicating your submittal. An Indexed Portable Document Format (PDF) or Print Ready CAD file formats with a minimum of 300dpi are the desired formats. If figures are in color, they must be scanned in color and saved as a separate file. _____ by initial here, the engineer on record acknowledges that the electronic copy is an identical replicate of the original hard copy submitted to the City of Las Vegas.

II. GRADING PLAN INFORMATION		
Yes	No	
✓		(1) 24" X 36" copy of the Grading Plan, (including all Detail Sheets) sealed by the engineer.
✓		Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street. Note: Proposed top of curb elevations must be provided for both sides of roadways even if only half street construction is required.
✓		Label existing topography at a minimum 5 foot elevation interval including adjacent developments, finished floor elevations of existing buildings and top of existing curbs extending 100 feet* around the perimeter of the site. (*Measured from the centerline of the adjacent roadway.)

II. GRADING PLAN INFORMATION		
Yes	No	
✓		Proposed on-site and off-site storm drains and other flood control facilities with plan and profile sheets for public storm drains showing the class of pipe, (Class III, IV, V, etc.), design hydraulic grade line, (HGL) and 100 year storm flow. A public drainage easement must be provided over on-site storm drains conveying off-site flows. An overflow path must be provided over all storm drains.
✓		All existing and "to be constructed" walls with cross-sections showing wall type, (e.g. block wall, retaining wall, flood wall, etc.), with limits clearly defined, adjacent ground elevations. Wall heights must meet current ordinances and in no case exceed 14 feet above the adjacent property.
	N/A	Street slopes for both interior and perimeter streets. Note: The minimum slope for a roadway is 0.4 percent, a minimum 18-inch storm drain must be provided where minimum slopes cannot be met.
✓		Back of lot elevations and lot drainage pattern for all lots including common lots.
	N/A	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
✓		On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners. (The project must pass flows through the site every 600 feet where the project is blocking flow paths.)
✓		This project uses a solid grouted stem wall (or approved alternate) at the back of sidewalk to provide erosion protection for landscaped areas where the depth of flow in the roadway exceeds the back of walk elevation. A corresponding cross-section detail is included.
✓		Commercial and Common Lot Landscape areas are not allowed to drain over the sidewalk. The grading plans show flow lines with grades and sidewalk under drains for all landscape areas draining to the public ROW.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
✓		Concrete valley gutters are required in parking lots with slopes less than 1 percent. Slopes through cul-de-sac must be at a 1 percent minimum where flow is drained through the cul-de-sac.
	N/A	Ten-foot wide public drainage easements to be privately maintained are allowed for flow less than 20 cfs. The depth of flow entering the easement must be checked using the submerged weir calculation.
	N/A	The limits of the flood zones and the base flood elevations (BFE) must be shown on all grading plans for all developments within a Special Flood Hazard Zone A, AO, AE, etc.
✓		Minimum finish floor elevation is 6 inches above highest adjacent top of curb. Finish floor calculations must include allowances for super elevations on curves and velocity head for tee intersections.
	N/A	Finished floor elevations for buildings adjacent to public drainage easements must be a minimum of 18 inches above the Q100 weir of submerged weir elevation, whichever is greater.

III. Local Entity Criteria - City of Las Vegas – Manual Section 1600		
Yes	No	
	N/A	Lots with "B and C Type Drainage" that drain from one lot to another through a drainage easement shall be required to install an underground nuisance drainage system or a 2-foot valley gutter. 16" x 24" minimum block wall openings are required for both options.
	N/A	Bubblers are required across 80 foot and greater ROW streets. When flows exceed 10 cfs, bubblers larger than 18 inches will be required up to a maximum of 36". Inlets must be sized to match the pipe size provided.

- Contact the Flood Control Section regarding the drainage study review fee. These fees are payable at the time of submittal.
- The Drainage Study must be conditionally approved prior to submitting improvement plans to the Civil and Planning Development of the Department of Building and Safety for review.

This document is intended as an **aid** in preparing Technical Drainage Studies for the City of Las Vegas. Each study submitted is reviewed for compliance with local and regional criteria. This form is not intended to be all-inclusive and does not limit the extent of the information, calculations or exhibits which may be necessary to properly evaluate the intended land use.

City of Las Vegas

AGENDA MEMO - PLANNING

PLANNING COMMISSION MEETING DATE: JULY 23, 2019
DEPARTMENT: PLANNING
ITEM DESCRIPTION: APPLICANT: SILVERSTEIN PROPERTIES, INC. - OWNER: MEADOWS LANE OWNER, LLC

** STAFF RECOMMENDATION(S) **

CASE NUMBER	RECOMMENDATION	REQUIRED FOR APPROVAL
VAR-76720	Staff recommends DENIAL, If approved subject to conditions:	
SDR-76721	Staff recommends DENIAL, If approved subject to conditions:	VAR-76720

** NOTIFICATION **

NEIGHBORHOOD ASSOCIATIONS NOTIFIED 23

NOTICES MAILED 246 - VAR-76720 and SDR-76721

PROTESTS 0 - VAR-76720 and SDR-76721

APPROVALS 0 - VAR-76720 and SDR-76721

SS

** CONDITIONS **

VAR-76720 CONDITIONS

Planning

1. The previously approved Variance (VAR-74518) to allow 482 parking spaces where 528 spaces are required shall be expunged upon final approval of this variance.

2. Approval of and conformance to the Conditions of Approval for Site Development Plan Review (SDR-76721) 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.

SDR-76721 CONDITIONS

Planning

1. Approval of and conformance to the Conditions of Approval for a Variance (VAR-76720) shall be required, if approved.

2. Conformance to the Conditions of Approval for the previously approved Site Development Plan Review (SDR-74252), except as amended herein.

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 development shall be in conformance with the site plan, landscape plan, and building elevations date stamped 06/26/19, except as amended by conditions herein.

5. An Exception from Title 19.06 is hereby approved, to allow 44 parking lot trees where 51 trees are required.

6. 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.

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

8. A technical landscape plan, signed and sealed by a Registered Architect, Landscape Architect, Residential Designer or Civil Engineer, must be submitted prior to or at the same time application is made for a building permit. A permanent underground sprinkler system is required, and shall be permanently maintained in a satisfactory manner; the landscape plan shall include irrigation specifications. Installed landscaping shall not impede visibility of any traffic control device.

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

Public Works

10. 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.

11. 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.

12. Concurrent with onsite development activities, extend public sewer in Meadows Lane from Valley View Boulevard west along the full frontage of the property and connect this site to this new sewer line. Additionally, re-route the private sewer from the parcels west of this site to the new public sewer in Meadows Lane and provide proof of a recorded private sewer easement, for the benefit of the parcels to the west, acceptable to the Sanitary Sewer Planning Section of the Department of Public Works prior to the issuance of building permits.

13. Concurrent with development of this site, construct a cross walk on the west side of the Meadows Lane and Mall entrance intersection to provide a school crossing to the school on the south side of Meadows Lane. Additionally, remove the existing median in Meadows Lane and provide a legal public path on the south side of Meadows lane to the school. Coordinate with the Clark County School District (CCSD) to construct a gate from the sidewalk to the school. If the CCSD will not provide a gate, then the applicant shall construct a gate to the sidewalk on the east side of Essex Lane.

14. Provide a copy of a recorded Joint Access Agreement between this site and the adjoining parcel to the east prior to the issuance of any permits.

15. A Traffic Impact Analysis must be submitted to and approved by the Department of Public Works prior to the issuance of any building or grading permits, submittal of any construction drawings or the recordation of a Map subdividing this site, whichever may occur first. Comply with the recommendations of the approved Traffic Impact Analysis prior to occupancy of the site. The Traffic Impact Analysis shall also include a section addressing Standard Drawings #234.1 #234.2 and #234.3 to determine additional right-of-way requirements for bus turnouts adjacent to this site, if any; dedicate all areas recommended by the approved Traffic Impact Analysis. All additional rights of way required by Standard Drawing #201.1 for exclusive right turn lanes and dual left turn lanes shall be dedicated prior to or concurrent with the commencement of on site development activities unless specifically noted as not required in the approved Traffic Impact Analysis. Phased compliance will be allowed if recommended by the approved Traffic Impact Analysis. No recommendation of the approved Traffic Impact Analysis, nor compliance therewith, shall be deemed to modify or eliminate any condition of approval imposed by the Planning Commission or the City Council on the development of 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 drainage ways 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.

** STAFF REPORT **

PROJECT DESCRIPTION

The applicant is proposing a Major Amendment to an approved Site Development Plan Review (SDR-74252) for a proposed multi-family residential development on the north side of Meadows Lane west of Meadows Mall. The proposed buildings would be reduced in height and the number of units would increase from 280 to 334.

ISSUES

- Pursuant to Title 19.16.100(H), a Major Amendment of the approved Site Development Plan Review is required, as the proposed changes do not comply with all applicable requirements of Title 19.
- As a result of the increase in the number of units and reconfiguration of the proposed clubhouse, a Variance (VAR-76720) is requested to allow 544 parking spaces where 597 spaces are required. The previously approved parking variance (VAR-74518) would be expunged if VAR-76720 is approved.
- An Exception is requested to allow 44 parking lot trees where 51 trees are required. Staff approves the Exception.
- The existing Off-Premise Sign use is allowed to remain on this R-4 zoned property by condition of approval of SDR-74252.

ANALYSIS

The general area was the focus of the Meadows Walkable Community Plan. Although the vision for this area to create a vibrant walkable community has not yet been fully implemented, this particular project does diversify the housing opportunities in the neighborhood with easy access to commercial amenities.

The proposed amendment would increase the number of residential units from 280 to 334, reallocate the approved three-bedroom units into one- and two-bedroom units, reduce the main building height from 72 feet to 70 feet and adjust provided parking. The amendment qualifies as "major" per Title 19.16.100 due to the increase in units and the need for an accompanying variance to allow reduced parking.

A parking variance (VAR-74518) was obtained in November 2018 for the approved site that allowed 482 parking spaces where 528 spaces are required. The proposed increase in units, along with the first floor clubhouse will exceed the new number of spaces provided (544 where 597 required); a Variance has been requested to allow this reduction in parking.

A second variance (VAR-74251) was obtained in November 2018 to allow two 72-foot tall buildings where 55 feet was required. An ordinance (Ordinance 6680) has since been adopted removing the 55-foot height restriction in the R-4 District. An architectural feature is proposed that would extend above the rear stair tower of Building B as much as 87 feet from grade. The projection conforms to residential adjacency requirements. Staff notes that Title 19 does not allow for roof signs in the R-4 District and therefore no signs could be permitted on the proposed architectural feature above the roofline of the building.

The basic layout of the development would remain the same as approved. Resident amenities would remain prominent, although their configuration has changed. The clubhouse and other amenities were increased from 9,490 square feet in a central location to 10,720 feet apportioned between a "fitness pavilion" and clubhouse on the ground floor. As these facilities are part of the Community Center, Private (Accessory) use, they require additional parking at a ratio of one space per 200 square feet. The applicant has provided 544 parking spaces, which allows only for resident and guest parking. The applicant's justification letter states that the clubhouse is intended to be private and not for use by the public, and therefore the additional parking is not necessary.

The perimeters will remain heavily landscaped with a variety of 24-inch box Raywood Ash, White Thorn Acacia, Mondel Pine and Mexican Fan Palm trees. Some of the required parking lot trees at the ends of parking rows have been omitted; however, the parking area will still be adequately shaded with all required islands provided. Staff approves an Exception to allow a reduction of seven trees in the parking area.

The submitted elevations remain virtually unchanged with exception of the reduction in height. They indicate changes in roofline, wall plane, colors and materials for visual interest, and will remain compatible with the adjacent commercial development.

The off-premise sign on this site will remain as allowed by a condition of approval of SDR-74252. A review of this sign is scheduled to be considered by the City Council in September 2019.

The Traffic Engineering Division of Public Works projects that the amended development would add approximately 294 trips per day on Meadows Lane, Valley View Boulevard and Decatur Boulevard. Currently, Meadows Lane is at about 51 percent of capacity, Valley View Boulevard is at about 70 percent of capacity and Decatur Boulevard is at about 82 percent of capacity. With this project, Meadows Lane is expected to be at about 52 percent of capacity, Valley View Boulevard to be at about 71 percent of capacity and Decatur Boulevard to be at about 83 percent of capacity. Based on Peak Hour use, this development would add into the area roughly 24 cars more than the current use, or about one every two minutes.

The development with the proposed changes will remain compatible with the adjacent commercial development and with residential development to the south of the site. However, the applicant has increased units and amenities without supplying sufficient parking to accommodate them. Staff therefore recommends denial of the requested Variance and Site Development Plan Review. If approved, the requested Variance would supersede the previously approved parking variance (VAR-74518) and VAR-74518 would be expunged.

FINDINGS (VAR-76720)

In accordance with the provisions of Title 19.16.140(B), Planning Commission and City Council, in considering the merits of a Variance request, shall not grant a Variance in order to:

1. Permit a use in a zoning district in which the use is not allowed;
2. Vary any minimum spacing requirement between uses;
3. Relieve a hardship which is solely personal, self-created or financial in nature."

Additionally, Title 19.16.140(L) states:

> "Where by reason of exceptional narrowness, shallowness, or shape of a specific piece of property at the time of enactment of the regulation, or by reason of exceptional topographic conditions or other extraordinary and exceptional situation or condition of the piece of property, the strict application of any zoning regulation would result in peculiar and exceptional practical difficulties to, or exceptional and undue hardships upon, the owner of the property, a variance from that strict application may be granted so as to relieve the difficulties or hardship, if the relief may be granted without substantial detriment to the public good, without substantial impairment of affected natural resources and without substantially impairing the intent and purpose of any ordinance or resolution."

No evidence of a unique or extraordinary circumstance has been presented, in that the applicant has created a self-imposed hardship by planning to construct a community center and clubhouse space without providing additional parking. A reduction in the floor area of the community center would allow conformance to the Title 19 requirements. In view of the absence of any hardships imposed by the site's physical characteristics, it is concluded that the applicant's hardship is preferential in nature, and it is thereby outside the realm of NRS Chapter 278 for granting of Variances.

FINDINGS (SDR-76721)

In order to approve a Site Development Plan Review application, per Title 19.16.100(E) the Planning Commission and/or City Council must affirm the following:

1. **The proposed development is compatible with adjacent development and development in the area;**

   The proposed development is compatible with the existing commercial development to the west and east of the site, abuts a freeway (U.S. 95 to the north) and does not adversely affect the residential properties to the south.

2. **The proposed development is consistent with the General Plan, this Title, and other duly-adopted city plans, policies and standards;**

   The amount of required parking spaces due to the proposed increase in residential units and clubhouse area does not conform to Title 19 requirements for the approved uses. Staff recommends denial of the associated variance to reduce the parking requirement that has been requested by the applicant.

3. **Site access and circulation do not negatively impact adjacent roadways or neighborhood traffic;**

   Access to the site is provided from Meadows Lane, a 72-foot Minor Collector right-of-way. Two, 24-foot wide driveways provide ingress and egress. Left turns are possible onto Meadows Lane from the site. Traffic projection data indicates that the increase in area traffic would not be significant if the project is approved.

4. **Building and landscape materials are appropriate for the area and for the City;**

   The proposed building materials are compatible with other development within the area. The proposed landscape materials adhere to the Southern Nevada Regional Plant list requirements.

5. **Building elevations, design characteristics and other architectural and aesthetic features are not unsightly, undesirable, or obnoxious in appearance; create an orderly and aesthetically pleasing environment; and are harmonious and compatible with development in the area;**

   The submitted building elevations feature neutral tones and façade materials that are harmonious and compatible with development in the area.

6. **Appropriate measures are taken to secure and protect the public health, safety and general welfare.**

   Development of the site will be subject to permit review and inspection, which will ensure the protection of the public health, safety and general welfare.

BACKGROUND INFORMATION

Related Relevant City Actions by Planning, Fire, Bldg., etc.	
02/05/75	The City Council approved a Rezoning (Z-0102-73) to C-1 (Limited Commercial) on this site as part of a larger request.
12/01/76	The City Council approved a Plot Plan and Building Elevation Review (Z-0102-73) for the Meadows Mall development.
11/03/04	The City Council approved a request for a Special Use Permit (SUP-4807) for a 51-foot tall, 14-foot by 48-foot Off-Premise Sign at 4300 Meadows Lane. The Planning Commission and staff recommended approval.
04/18/12	The City Council approved General Plan Amendment (GPA-43991) to establish Redevelopment Area 2 and change the future land use designation on various parcels within the Redevelopment Area to Commercial or Mixed Use. The Planning Commission and Staff recommended approval.
02/18/15	The City Council approved a Required Review (RQR-56792) for an approved Special Use Permit (SUP-4807) for an existing 51-foot tall, 14-foot by 48-foot Off-Premise Sign at 4490 Meadows Lane. Staff recommended approval.
11/21/18	The City Council approved a request for a Rezoning (ZON-74250) from C-1 (Limited Commercial) to R-4 (High Density Residential) on 9.63 acres on the north side of Meadows Lane, approximately 2,120 feet west of Valley View Boulevard. The Planning Commission and staff recommended approval.
	The City Council approved a request for a Variance (VAR-74251) to allow two proposed six story, 72-foot tall buildings where 55 feet is the maximum height allowed on 9.63 acres on the north side of Meadows Lane, approximately 2,120 feet west of Valley View Boulevard. The Planning Commission recommended approval; staff recommended denial.

Related Relevant City Actions by Planning, Fire, Bldg., etc.	
	The City Council approved a request for a Variance (VAR-74518) to allow 482 parking spaces where 528 spaces are required on 9.63 acres on the north side of Meadows Lane, approximately 2,120 feet west of Valley View Boulevard. The Planning Commission recommended approval; staff recommended denial.
	The City Council approved a request for a Special Use Permit (SUP-74517) for a Community Center, Private (Accessory) use on the north side of Meadows Lane, approximately 2,120 feet west of Valley View Boulevard. The Planning Commission recommended approval; staff recommended denial.
	The City Council approved a request for a Site Development Plan Review (SDR-74252) for a proposed 280-unit multi-family residential development on 9.63 acres on the north side of Meadows Lane, approximately 2,120 feet west of Valley View Boulevard. The Planning Commission recommended approval; staff recommended denial.
04/03/19	The City Council adopted Ordinance 6680, which removed the building height limitation generally applicable to main buildings in the R-4 Zoning District.
04/12/19	A one-lot Parcel Map (PMP-75674) on 9.63 acres on the north side of Meadows Lane, approximately 1,345 feet east of Decatur Boulevard, was recorded.

Most Recent Change of Ownership	
12/26/18	A deed was recorded for a change in ownership.

Related Building Permits/Business Licenses	
06/27/08	A building permit (#05001859) was issued for a final inspection for an existing off-premise sign at 4490 Meadows Lane.
03/09/06	A building permit (61166) was issued for a 240V meter and main electrical service for an existing off-premise sign at 4490 Meadows Lane. A final inspection was completed 05/15/06.

Pre-Application Meeting	
05/29/19	A pre-application meeting was held with the applicant to discuss submittal requirements for a Site Development Plan Review application. Staff informed the applicant of the following items: • A new variance would need to be requested to allow a reduction in required parking, as the increase in units would increase the requirement. • Residential adjacency could be affected by a proposed architectural feature on a rooftop stair tower. • A review of the existing off-premise sign is due. The applicant stated that the owner intends to maintain the existing off-premise sign on this site, although it is now zoned R-4.

Neighborhood Meeting
A neighborhood meeting was not required, nor was one held.

Field Check	
06/13/19	The site is undeveloped except for an existing Off-Premise Sign located near the north property line and facing the U.S. 95 Freeway. Several parking lot light standards remain. The property is enclosed on the east, west and south by a chain link fence.

Details of Application Request	
Site Area	
Net Acres	9.63

Surrounding Property	Existing Land Use Per Title 19.12	Planned or Special Land Use Designation	Existing Zoning District
Subject Property	Off-Premise Sign	MXU (Mixed Use)	R-4 (High Density Residential)
North	U.S. 95 Freeway	Right-of-Way	Right-of-Way
South	Public or Private School, Primary	PF (Public Facilities)	C-V (Civic)
	Single Family, Detached	L (Low Density Residential)	R-1 (Single Family Residential)
	Common Area Landscaping	SC (Service Commercial)	C-1 (Limited Commercial)
East	Shopping Center (Regional Mall)	MXU (Mixed Use)	C-1 (Limited Commercial)
West	Shopping Center	MXU (Mixed Use)	C-1 (Limited Commercial)

Master and Neighborhood Plan Areas	Compliance
Meadows Walkable Community Plan	Y
Special Area and Overlay Districts	**Compliance**
A-O (Airport Overlay) District (140 Feet)	Y
Other Plans or Special Requirements	**Compliance**
Trails	N/A
Las Vegas Redevelopment Plan Area (Area 2)	Y
Interlocal Agreement	N/A
Project of Significant Impact (Development Impact Notification Assessment)	N/A
Project of Regional Significance	N/A

DEVELOPMENT STANDARDS

Pursuant to Title 19.06 and the approved Site Development Plan Review (SDR-74252) for this site, the following standards apply:

Standard	*Required/Approved*	*Provided*	*Compliance*
Min. Lot Size	7,000 SF	419,640 SF	Y
Min. Lot Width	N/A	375 Feet	N/A
Min. Setbacks • Front • Side • Rear	 10 Feet 5 Feet 20 Feet	 133 Feet 66 Feet 163 Feet	 Y Y Y
Min. Distance Between Buildings	Unlimited	45 Feet	Y
Max. Lot Coverage	100 %	21 %	Y
Max. Building Height	Limited by residential adjacency	85 Feet	Y
Trash Enclosure	Screened, Gated, w/ a Roof or Trellis	Screened, gated, under building roof	Y
Mech. Equipment	Screened	Screened within building footprint	Y

Pursuant to Title 19.06.040, the following standards apply:

Residential Adjacency Standards	*Required/Allowed*	*Provided*	*Compliance*
3:1 proximity slope (porte cochere)	93 Feet	232 Feet	Y
3:1 proximity slope (south bldg. face)	216 Feet	287 Feet	Y
3:1 proximity slope (Bldg B stair tower)	261 Feet	1,015 Feet	Y
Adjacent development matching setback	20 Feet	133 Feet	Y
Trash Enclosure	50 Feet	556 Feet	Y

Pursuant to Title 19.06, the following standards apply:

Landscaping and Open Space Standards				
Standards	**Required**		**Provided**	**Compliance**
	Ratio	**Trees**		
Buffer Trees:				
• North	1 Tree / 30 Linear Feet	11 Trees	22 Trees	Y
• South	1 Tree / 20 Linear Feet	11 Trees	15 Trees	Y
• East	1 Tree / 30 Linear Feet	37 Trees	51 Trees	Y
• West	1 Tree / 30 Linear Feet	34 Trees	35 Trees	Y
TOTAL PERIMETER TREES		**93 Trees**	**123 Trees**	**Y**
Parking Area Trees	1 Tree / 6 Uncovered Spaces, plus 1 tree at the end of each row of spaces	51 Trees	44 Trees	N
LANDSCAPE BUFFER WIDTHS				
Min. Zone Width				
• North	10 Feet		10 Feet	Y
• South	10 Feet		24 Feet	Y
• East	6 Feet		10 Feet	Y
• West	6 Feet		10 Feet	Y
Wall Height	6 to 8 Feet Adjacent to Residential		Not adjacent to residential; Existing 10-16' retaining wall along north PL	Y

Street Name	Functional Classification of Street(s)	Governing Document	Actual Street Width (Feet)	Compliance with Street Section
Meadows Lane	Minor Collector	Title 13	68	Y

SS

Pursuant to Title 19.08 and 19.12, the following parking standards apply:

Parking Requirement							
Use	***Gross Floor Area or Number of Units***	***Required Parking***			***Provided Parking***		***Compliance***
		Parking Ratio	Regular	Handi-capped	Regular	Handi-capped	
Multi-Family Residential (1 BR)	196 units	1.25 spaces per unit	245				
Multi-Family Residential (2 BR)	138 units	1.75 spaces per unit	242				
Multi-Family Residential (Guest Parking)	334 units	1 space per 6 units	56				
Community Center, Private (Accessory)	10,720 SF	1 space per 200 SF GFA	54				
TOTAL SPACES REQUIRED			597		544		N
Regular and Handicap Spaces Required			585	12	532	12	N
Percent Deviation			8.9%				

Exceptions		
Requirement	***Request***	***Staff Recommendation***
1 – 24" box shade tree in islands in parking lot and planters at ends of rows (51 trees required)	To allow 44 parking lot trees	Approval

SS

Department of Public Works
Development Review Division • Drainage Study Team
500 S Grand Central Pky | Box 554000 | Las Vegas NV 89155-4000
(702) 455-4600 | Fax (702) 388-2550
www.ClarkCountyNV.gov/PubWorks

DRAINAGE STUDY MINIMUM CRITERIA CHECKLIST

Project Name: Meadows Multifamily
Engineer: Jesse J. Patchett, P.E., CFM **Company : Wood Rodgers, Inc.**
Address: 2190 East Pebble Road, Suite 200
City: Las Vegas **State: NV** **Zip: 89123**
E-mail: jpatchett@woodrodgers.com
Phone Number: (702) 790-55303 **Fax Number: (916) 341-7767**
Property Meadows Owner, LLC **Address: 9555 Hillwood Dr. Ste 110**

City: Las Vegas State: NV Zip: 89134 **Phone Number: (702)-545-0355**
Fax Number: 702-545-0987 **E-mail: PF@trudevco.com**

The following information is intended as a guide to the engineer for providing the minimum information required for a Technical Drainage Study submittal prior to the County performing a review. The engineer will remain responsible to ensure the Technical Drainage Study is prepared within the guidelines as set forth in the Clark County Regional Flood Control District (CCRFCD) *Hydrologic Criteria and Drainage Design Manual* (Design Manual).

This document is intended as an aid in preparing Technical Drainage Studies for Clark County. Each study submitted is reviewed for compliance with local and regwional criteria. This form is not intended to be all inclusive and does not limit the extent of the information, calculations, and exhibits which may be necessary to properly evaluate the intended land use.

If items are not applicable for the subject site, provide N/A.

DRAINAGE STUDY MINIMUM CRITERIA CHECKLIST

I. GENERAL REQUIREMENT

Yes	No	
X		Design Manual Standard Form 1 with the engineer's seal
X		Design Manual Standard Form 4
X		2 copies of the 24" x 36" drainage plan with the engineer's seal
	N/A	A notarized letter from adjacent property owner(s) allowing off-site grading or discharge

II. DRAINAGE PLAN INFORMATION

Yes	No	
X		Sheet size: 24" x 36"
X		Minimum Scale: 1" = 50'
X		Project Name
X		Vicinity Map
X		Revision Box
X		North Arrow and Bar Scale
X		Professional Engineer's signature, seal, and date
X		Engineer's/Consultant's address and phone number
X		Elevation Datum and Benchmark
X		Legend for symbols and abbreviations
X		Cut/fill scarps, where applicable
X		Street Names, Grades, and Widths
X		Spot grades for top of curbs and street crowns at lot lines, grad breaks, and along curb returns
X		Existing contours encompassing the site and 100 feet beyond with spot elevations for important, excess of 100 feet where appropriate
X		Minimum finish floor elevations
X		Typical street sections
X		Proposed contours or spot elevations in sufficient detail to exhibit intended drainage patterns and slopes
X		Property lines
X		Right-of-way lines and widths, existing and proposed
X		Existing improvements and their elevations
X		Delineation of proposed onsite drainage basins indicating area and 10-year and 100- year storm peak flows at basin concentration points
X		Drainage flow direction with Q100 and V100
X		Cross-sectional detail for channels, including cutoff wall locations

Yes	No	
X		Existing and proposed drainage easements and widths shown with sufficient detail
X		Location and detail of existing, proposed, and future block wall openings
	N/A	Detail of flood walls illustrating depth of flow, proposed grouting height, etc.
X		Retaining wall locations
X		Building and/or lot numbers
	N/A	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site
	N/A	Limits of existing floodplain based on current FIRM
	N/A	For areas in Zone A, AE, AH, and AO, base flood elevations (BFEs) must be shown for each lot; BFEs may be listed on each lot, or in a table

III. H Y D R O L O G I C ANALYSIS

Yes	No	
X		Appropriate soil information
X		Input and output information for computer models (HEC-1 or TR-55). The flow routing diagram must be provided with HEC-1 models
X		Use of correct precipitation values in and outside the McCarran Airport rainfalls area
X		A discussion in the text of the hydrologic analysis justifying basin boundaries and cutoffs, supporting assumptions and calculations
X		A summary table of storm water flows showing basin area, Q10 and Q100 for both individual basins and combined basin flows where applicable
X		Copies of supporting technical information referenced from a previously approved study and a comment accepting these flows
X		On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners

IV. HYDRAULIC ANALYSIS

Yes	No	
	N/A	Flow split calculations and supporting documentation for the method of flow split calculations used
X		Normal depth street flow calculations and cross sections for all interior and perimeter streets (address dry lane criteria)
X		Provide depth x velocity "D x V" products for flows in interior and exterior streets Q_{10}(D x V ≤ 6) Q_{100}(D x V ≤ 8)
	N/A	Appropriate hydraulic calculations for block wall opening assuming a 50% vertical clogging factor (Assume the lower half of the opening is plugged)
	N/A	Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set first floor elevations. Hydraulic calculations must include submerged weir, super elevation and tee intersection losses where appropriate
X		Provide necessary freeboard requirements to set the finished floor elevations
X		On-site facilities must perpetuate flows through or around the site without significantly impacting adjacent property owners

Yes	No	
	N/A	A complete water surface profile analysis (HEC-2, WSPG, etc.) for channel flows and FEMA Zone A flood zones · Field survey data · Input and output information · Plotted cross-sections based on survey with proper encroachments · A map showing the location of the cross-sections · Analysis of both sub and supercritical flow segments · A summary table and a discussion of the results in the text of the report
X		Provide a 50% clogging factor in the capacity calculation for drop inlets
X		Hydraulic calculations for culverts and storm drains

V. MAPS AND EXHIBITS

Yes	No	
X		A Flood Insurance Rate Map (FIRM) with the site delineated
X		The CCRFCD Master Plan Update Figures (F&H) with the site delineated
X		A soils map with the site and the upstream sub-basins delineated
X		Off-site drainage basin map for existing, interim and future conditions showing the basin boundaries, concentration points, existing topo and flows in cfs
X		On-site drainage basin map for existing and proposed conditions showing the basin boundaries, concentration points, existing topo and flows in cfs
X		Vicinity Map with local and major cross streets identified

Engineers Seal

Submitted By:_____

Date:_____

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STANDARD FORM 2

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- CCRFCD Excerpts
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- Standard Form 4
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APPENDIX B: HYDRAULICS

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- FMB – Section Across the Gutter on the South West Side of the Project
- FMC – Section Across the Gutter on the South East Side of the Project
- FMD – Section Across the Gutter on the North East Side of the Project

APPENDIX C: REFERENCE MATERIAL

- DS # 3029 "Drainage Study for Meadows Mall Inventory Storage Yard" prepared by KJE Consulting Engineers. October 2001.
- DS # 4999 "E. W. Griffith ES Replacement" prepared by Lochsa, October 2018.

APPENDIX D: PLANS AND DETAILS

- General Notes Sheet
- Grading Plans
- Detail Sheets

1 GENERAL DESCRIPTION

1.1 Study Overview and Purpose

This technical drainage study (Study) has been prepared to demonstrate technical conformance with criteria found in the Clark County Regional Flood Control District's (CCRFCD) Hydrologic Criteria and Drainage Design Manual (HCDDM) for an approximate 9.63-acre residential development site known as Meadows Multifamily (Project). The Project is located west of Meadows Mall and is bounded to the north by US Route 95 and to the south by Meadows Lane in Clark County, Nevada. See **Figure 1** for the location of the Project.

1.2 Site Description and Location

The Project site consists of assessor's parcel numbers (APN) 139-31-111-010. The site is located within Section 31, Township 20 South, and Range 61 East of the Mount Diablo Meridian (MDM), in Clark County, Nevada. The Project site is located just west of Meadows Mall in Clark County Nevada. US Route 95 borders the Project site to the north and Meadows Lane borders the Project site to the south. To the west of the Project site is an existing commercial development.

1.3 CCRFCD Master Planned Facility Information

The Project site is shown on Figure F-29 in the 2018 CCRFCD Master Plan Update (MPU). The MPU indicates that there are no master-planned facilities located adjacent to the Project site. See **Figure 2A** for a graphical depiction of the site and its relationship to regional facilities and **Figure 2B** for the facility inventory. The Project site is located within basin AL14 in the Central Watershed.

1.4 FEMA Floodplain Information

The Project site can be viewed on Flood Insurance Rate Map (FIRM) Panel 32003C2165D. As indicated on Panel 32003C2165D, the site is within Shaded and Unshaded Zone 'X'. Unshaded zone 'X' areas are determined to be outside the 0.2% annual chance (i.e. 500-year) floodplain. Shaded zone 'X' areas are areas within the 0.2% annual chance flood hazard area, areas within the 1% annual chance flood hazard area with average depths less than one foot, or with drainage areas less than one square mile. Refer to **Figure 3** for a graphical depiction of the Project site on the FEMA FIRMette.

1.5 Referenced Drainage Studies

The following drainage studies were reviewed in the preparation of this study. All pertinent reference material has been included in **Appendix C**.

1. DS # 3029 "Drainage Study for Meadows Mall Inventory Storage Yard" prepared by KJE Consulting Engineers. October 2001.

   This drainage study was performed to address drainage aspects of constructing a parking lot for the Meadows Mall, just west of the Project site.

2. DS # 4999 "E. W. Griffith ES Replacement" prepared by Lochsa, October 2018.

This drainage study was performed to address the drainage aspects of a site south of Meadows Lane.

Wood Rodgers has reviewed these referenced drainage studies and concurs with the results of the referenced study. Wood Rodgers accepts the conclusions as being an accurate representation of the current and future conditions.

2 HYDROLOGY

2.1 Methodology

The SCS Unit Hydrograph Methodology in conjunction with the HEC-1 Flood Hydrograph Package, from the United States Army Corps of Engineers, was used to determine the peak runoff generated by the 2-year 6-hour, 10-year 6-hour, and 100-year 6-hour storm events. Parameters used in the analyses are described in the following paragraphs and the HEC-1 output data is in **Appendix A**.

2.2 Precipitation

The Project site is located inside of the McCarran Airport Rainfall Area. The 6-hour, 10-year, and 100-year storm event rainfall depths were obtained from Table 505 in the CCRFCD HC&DDM. The precipitation values used in the HEC-1 models are 0.72, 1.58, and 2.77 inches for the 2-year 6-hour, 10-year 6-hour, and 100-year 6-hour storm events, respectively. Based on these values, a 10-year to 100-year precipitation ratio of 0.57 was used and a 2-year to 100-year precipitation ratio of 0.26. Furthermore, since the drainage area of the onsite watershed is less than eight square miles, the SDN 3 design storm distribution shown on CCRFCD HC&DDM Table 503 was used. Referenced precipitation material from the CCRFCD HC&DDM are included in **Appendix A**.

2.3 Soil Classification

The soils information for this study was obtained from a USDA Web Soil Survey (WSS) Report prepared for the Project. According to the WSS report, the site is within soil group 615. The WSS does not assign soil group 615 with a hydrologic soils group classification. The WSS is included in **Appendix A.** From the CCRFCD's 2018 MPU curve number matrix (included in **Appendix A**), the existing site was assigned a curve number of 85 which is designated for land use category index number 1 (undeveloped) for the majority of the site. The portion in the north which is a parking lot and was assigned a curve number of 98. The developed site will have a land use of 9 (residential / commercial) and a curve number of 95.

2.4 Time of Concentration and Lag Time

Time of Concentration calculations were performed per section 602 of the HCDDM for basins less than one square mile. The methodology was developed by the Federal Aviation Administration (FAA1970) and is outlined as follows:

$$t_c = t_i + t_t$$

TLAG = 0.60* t_c / 60 (hrs.) – Lag time used in HEC1 model

In which t_c = Time of Concentration (min)
t_i = Initial, Inlet, or Overland Flow Time (min)
t_t = Travel Time in the Ditch, Gutter, Storm Sewer, etc. (min)

The initial overland flow time is calculated as follows:

$$t_i = 1.8(1.1\text{-}K)L_o^{1/2}/S^{1/3}$$

Where K = flow resistance factor
L_o = overland flow length
L = length of channel (etc.)
S = average slope of basin (%)

For SCS & TR55 unit hydrographic Methods

$$K = 0.0132(CN) - 0.39$$

Where: CN = SCS runoff curve number
t_t = L/60V (min)
V = average channel velocity (ft. /sec)

Velocity determination for time of concentration

At the upstream end of a drainage area, the initial overland flows begin to collect and gradually increase from small, shallow flows to larger, deeper flows with greater velocities. To estimate the average velocity for flow condition that constantly varies throughout the length of drainage area, two generalized relationships can be used. Velocity V_1 applies to the small shallow flows in the first 500 feet, or less of travel distance and velocity V_2 applies to the remainder of the travel distance where the velocity is greater. Manning's equation was used to derive formulas for estimating the two travel time velocities. The equations are as follows:

$$V = CS^{1/2} \qquad C = 1.49/n\ R^{2/3} \qquad R = A/P$$

Where: V = Average Velocity (fps)
S = Average Slope (ft./ft.)
N = Manning's Roughness Coefficient
R = Hydraulic Radius (ft.)
P = Wetted Perimeter (ft.)
A = Area of Flow (sq. ft.)

Two sets of coefficients were determined, one for developed conditions and the other for undeveloped conditions. For the first developed-conditions velocity (V1), the appropriate coefficient (C=20.2) represents street flow with n = 0.016 and a depth of flow in the gutter of 0.3 feet. For the second developed-conditions velocity (V2), the appropriate coefficient (C=30.6) represents curb height street flow. As may be noted, V2 is approximately equal to

1.5 times V1. Typically, drainage areas are delineated such that the channelized flow considered in the calculations of travel times is within streets and other minor watercourses and does not include significant lengths of major improvement floodway and channels in the travel distance for the time of concentration. For the first undeveloped conditions velocity (V1), the appropriate coefficient (C = 14.8) represents wide channel flow with D = 0.25' and n = 0.04. For the second undeveloped conditions velocity (V2), the appropriate coefficient (C = 29.4) represents wide channel flow with a depth of 0.7 feet and n = 0.04.

For urbanized basins, the time of concentration should not exceed the time of concentration calculated by the following equation.

$$T_c = L/ 180 + 10$$

Where: L = Watershed Length (ft.)

Additionally, the minimum t_c for urbanized areas is 5 minutes.

These methods are consistent with the methods outlined in Technical Release 55, SCS (TR55) for calculating the time of concentration and should provide times of concentration and lag times that are consistent with one another and with the degree of accuracy of typical hydrologic modeling.

The Standard Form 4 for existing and developed conditions is included in **Appendix A**.

3 RESULTS

3.1 Existing Condition

The following description refers to **Figure 4**, Existing Condition Drainage Map.

Existing Offsite

The existing offsite drainage basin was determined from the 2018 MPU. Watershed AL14 in the MPU, which includes the Project site, was used to establish upstream offsite watershed OFX1. Hydrologic parameters of AL14 were used, but adjusted for travel length and area to properly prorate the flow upstream of the project.

OFX1 represents the flow from the area west of the Project.

OFX1 combines with onsite flows in Meadow Lane at the southeast corner of project.

Existing Onsite

Onsite stormwater runoff is generated by three basins in the existing condition: ONX1, ONX2, ONX3.

Basin ONX3 represents the existing Project site that drains directly to Meadow Lane. Runoff from ONX3 generally sheet flows from northwest to southeast. ONX2 generally drains from northwest to southeast to Meadow Mall Road at a walkway in the southeast corner of the shed. ONX1 at the northern portion of the project site generally sheet flows from west to east and drains to Meadows Mall Road.

The standard form 4 and existing condition HEC-1 analysis can be found in **Appendix A**. The existing condition hydrologic results are summarized in **Table 1**.

Table 1 – Existing Conditions Hydrology Results

Basin ID	Area (Acres)	Q_{10} (cfs)	Q_{100} (cfs)	Notes
ONX1	1.59	3	5	Existing onsite undeveloped basin 1.
ONX2	5.22	3	10	Existing onsite undeveloped basin 2.
ONX3	2.82	2	5	Existing onsite undeveloped basin 3.
CPX1	---	8	20	Combined existing onsite runoff at collection point at the southeast corner of the Project site.
OFX1	---	159	333	Flows in Meadow Lane upstream of the Project
CPX2	---	163	342	Collection point of CPX1 + OFX1

3.2 Ultimate Developed Drainage Condition

The following description refers to **Figure 5**, Developed Condition Drainage Map. The proposed onsite basin areas were determined from the proposed grading plan which is included in **Appendix D**.

Offsite

Offsite surface stormwater runoff is generated by the same basin to the west as existing conditions (OFD1 = OFX1). The referenced study is discussed in detail in Section 1.5 of this Study. The offsite basin is already fully developed in the existing condition and offsite flow does not change.

Runoff from the future offsite basin OFD1 combines with flow from the developed onsite basin OND1 and OND2 at Combination Point CPD1 in Meadow Lane at the southeast corner of the Project.

Onsite

Onsite stormwater runoff is generated by 8 basins: OND1 – OND8. Basins OND1, OND3, OND6, and OND8 represent landscape areas along the perimeter of the project that sheet flow off the project site. Basin OND4 and OND5 represent the project areas that flow

through parking lot areas to two outlets along the southern parking lot boundary. Basin OND7 represents the portion of the project that drains overland to the east to Meadows Mall Road.

The standard form 4 and devoloped condition HEC-1 analysis can be found in **Appendix A**. The developed condition hydrologic results are summarized in **Table 2**.

	Table 2 - Developed Condition Hydrology Results				
Basin ID	**Area (Acres)**	**Q_2 (cfs)**	**Q_{10} (cfs)**	**Q_{100} (cfs)**	**Notes**
OND1	0.15	0	0	0	
OND2	0.24	0	0	1	
OND3	0.12	0	0	0	
CPD1		0	0	1	Combined runoff from the Project at collection point at southeast corner (OND7 + OND8).
OND4	4.23	3	7	12	
OND5	1.75	1	3	5	
OND6	0.17	0	0	0	
OND7	2.63	2	4	8	
OND8	0.34	0	0	0	
CPD2		2	4	8	Combined runoff from the Project at collection point at Meadows Mall Driveway (OND7 + OND8).
DR1		2	4	8	Routing of CPD2 to Meadows Lane
CPD3		6	14	26	Combined developed runoff from the Project at collection point at the southeast corner (CPD1 + DR1 + OND4 + OND5).
OFD1		43	159	333	Flows in Meadow Lane upstream of the Project
CPD4		45	165	345	Ultimate Condition in Meadows Lane CPD4 = CPD3 + OFD1

3.3 Discussion

Proposed Flows to Downstream Properties Vs Historical Flows to Downstream Properties

The Project increases peak flow from the Project site to Meadows Lane by approximately 6 cfs in the 100-year storm event (i.e the difference CPD3 and CPX1). However, the Project site is considered as residential/commercial land use category 9 in the MPU and downstream facilities are designed to accommodate these flows. The combined flows in Meadows Mall Road are increased by approximately 3 cfs (i.e. the difference between CPD4 and CPX2).

4 HYDRAULICS

4.1 Methodology & Criteria

The FlowMaster V8i computer program was used to analyze surface flow sections. According to the CCRFCD HC&DDM, the flow depth times the velocity (D*V) factor must be less than or equal to six, and the depth must be less than one-foot for the 10-year storm event. Similarly, the D*V factor must be less than or equal to eight and the depth must be less than two-feet for the 100-year storm event. Finally, the CCRFCD HC&DDM requires a 12-foot wide dry travel lane (excluding center turning lanes) during the 10-year storm event for streets with a right-of-way greater than 80-feet. Meadows Lane is a 60-foot right-of-way; therefore, the dry lane criteria does not apply to Meadows Lane.

The XPSWMM computer program was used to analyze conduit outfalls and overland release points.

4.2 Street Flow Sections

As shown on Figure 5, the Clark County GIS 2-foot contour data indicates that flow in Meadows Ln adjacent to the Project site continues to flow east through the street as well as a local storm drain that connects with Master Plan facilities. As the local storm drain size is not known, calculations were based on 100% surface flows and water level in the street was contained at or below the top of the curb. Cross Section FMA was analyzed to determine the depth of flow in the Meadows Lane. See **Section 4.4** for results.

4.3 Onsite Swales and Storm Drainage Analysis

Flow from Basins OND4 and OND5 are proposed to drain overland through the parking lot areas to outlets along the southern boundary. Water quality flows from OND4 and OND5 are proposed to drain through 5 ft openings in the curb along the south parking lot areas. The curb openings will discharge to a swale across the landscape area adjacent to Meadows Lane and discharge to underdrains through the sidewalk along Meadows Lane. Larger flows during flooding events from OND4 and OND5 will discharge to a drop inlet which connects with existing storm sewers.

The water quality design flow was calculated according to CCRFCD HC&DDM Section 1502.3.

$D_{85} = D_2 * 0.32$
$Q_p / A = 1.5042 * D_{85} – 0.0066$

Where, D_{85} is the 85th percentile depth, D_2 is the 2-year rainfall depth, Q_p is the water quality flow and A is the parking lot area to be treated.

The water quality flows for basins the west and east parking lot areas are shown in **Table 3.**

Table 3 – Summary of Water Quality Flows					
Basin	**BMP Area Name**	**Parking Lot Area (acre)**	**D_{85} (in)**	**D_2 (in)**	**Q_p (cfs)**
OND4	Area-2	1.64	0.72	0.23	0.56
OND5	Area-3	0.71	0.72	0.23	0.24

Typical runoff events will drain through overland pathways. Larger storm events will drain through two drop inlets along the southern border of the parking lots. The drop inlets are 5.5 ft Type C inlets. The drop inlet at the west will be placed 0.2 ft above the overland release to capture runoff from storm events larger than the water quality storm event. The drop inlet at the east will, similarly, be placed 0.15 ft above the overland release. The outfall systems were analyzed hydraulically in XPSWMM. The peak flow into the storm drain trunk line is 10 cfs at the western outfall and 3.5 cfs at the eastern outfall. The XPSWMM output is shown in **Appendix B**. The amount of peak flow to the overland release versus the outfall conduit is shown in **Table 4**.

Table 4 – Summary of Flow XPSWMM Results				
Outfall	**Event**	**Depth (ft)**	**Overland Release Flow (cfs)**	**Conduit Flow (cfs)**
West	WQ	0.15	0.56	0
West	2-year	0.5	1.3	1.4
West	10-year	0.7	1.6	4.9
West	100-year	0.8	1.8	10.0
East	WQ	0.2	0.24	0
East	2-year	0.3	0.8	0.3
East	10-year	0.5	1.2	1.5
East	100-year	0.6	1.4	3.5

4.4 Onsite Drainage Sections

Cross sections FMB, FMC, and FMD were analyzed to determine depth of flow within the project area. Cross section geometry was based on the grading plan shown in **Appendix D.** Peak runoff rates from the 100-year event were used and it was determined that the 10-year and 100-year depth and velocity criteria were met using the 100-year flows. **Table 5** below summarizes hydraulic section calculations. See report **Section 6 Finished Floor Elevations** for a table demonstrating proposed Finished Floor Elevations (FFE) meet criteria.

Table 5 - Summary of Flow Depth Analysis

FM Section	SLOPE (%)	Q_{100}	D_{100}	V_{100}	D_{100} X V_{100}
FM A	1	341	1.26	7.51	9.46
FM B	1	5	0.1	3.32	0.33
FM C	1	11.9	0.22	3.32	0.73
FM D	1	15	0.25	3.32	0.83

5 ONSITE PARKING LOT STORM WATER TREATMENT

Proposed design incorporates features intended to satisfy criteria found in Section 1500 of the HCDDM. Parking lot areas are graded to drain through BMP swales to collect asphalt oils and silt prior to discharge of storm water runoff. Two BMP swales are proposed with development of the subject site to treat 78% of new parking lot areas. The BMP details are summarized below in **Table 6**. Refer to **Figure 8** for the BMP Basin Map.

Table 6 - BMP Summary Table

BMP Area	Area (Acres)	Treated
AREA-1	0.42	YES
AREA-2	1.64	YES
AREA-3	0.71	YES
AREA-4	0.23	NO
AREA-5	1.04	NO
TOTAL AREA	3.00	
TOTAL TREATED AREA	2.34	78%

6 FINISHED FLOOR ELEVATIONS

Finished floor elevations for the Project have been determined to be a vertical distance above the gutter flow line of twice the depth of flow in the street on the high side of the lot (up to 18-inches) and six-inches above the top of curb at the high side of the building, whichever is higher. The finished floor analysis of the Project for the street flows is shown below in **Table 7**.

Table 7 - Finished Floor Street Flows Elevation Table

Pertinent Hydraulic Section	T/C at High Side of the Lot	Adjacent Flow Line Elevation	100-yr Flow Depth	Min. FFE Based on FL +2*D	Min FFE Based on TC + 6"	Proposed Finished Floor Elevation	FL+2D Check	FF Check
FM D	2181.5	2181	0.25	2181.5	2182	**2182.3**	**OK**	**OK**
FM B	2180	2179.5	0.1	2179.7	2180.5	**2182.1**	**OK**	**OK**
FM C	2179	2178.5	0.22	2178.94	2179.5	**2181.1**	**OK**	**OK**
FM A	2175.5	2175	1.26	2177.52	2176	**2182.1**	**OK**	**OK**

7 CONCLUSIONS

1. The project site is not located within a Special Flood Hazard Area as designated by FEMA. Therefore, FEMA notification is not required.
2. The Project is compliant with the CCRFCD HC&DDM.
3. The Project is compliant with the applicable drainage laws as recognized by the State of Nevada.
4. The existing and proposed drainage facilities can safely and effectively convey runoff from the 10-year and 100-year storm without negatively impacting existing or proposed development.
5. Proposed finished floor elevations meet requirements set forth in the CCRFCD HC&DDM.
6. Engineer recommends construction of the proposed project based on submitted plans and technical documents.

8 REFERENCES

1. Clark County Regional Flood Control District Hydrologic Criteria and Drainage Design Manual, Adopted August 1999, WRC Engineering (updated by Montgomery Watson). Revised September 12, 2013

2. Clark County Regional Flood Control District Website, http://www.ccrfcd.org

3. 2018 Clark County Regional Flood Control District Flood Control Master Plan Update, Atkins

4. HEC-1 Flood Hydrograph Package Version 4.1, June 1998, U.S. Army Corps of Engineers

5. Web soil survey website, http://websoilsurvey.sc.egov.usda.gov/App/HomePage.htm

6. Flow Master Version V8i, 2009, Bentley Systems, Inc.

7. XPSWMM Version 2017.1.1, Innovyze.

FIGURES

- Figure 1 Vicinity Map
- Figure 2A CCRFCD Facilities Map
- Figure 2B CCRFCD Facilities Map Table
- Figure 3 FEMA Map
- Figure 4 Existing Condition Drainage Map
- Figure 5 Developed Condition Drainage Map
- Figure 6 BMP Basin Map

TABLE OF APPENDICES

APPENDIX A
(Hydrology)

- Existing Condition HEC-1 Analysis
- Developed Condition HEC-1 Analysis
- CCRFCD Precipitation Excerpts
- NRCS Web Soils Survey Report
- Rainfall & Curve Number Calculations
- Standard Form 4
- CCRFCD Tc Excerpt
- CCRFCD Routing Excerpt

APPENDIX B
(Hydraulics)

- FMA – Section Across the Gutter on Meadows Ln
- FMB – Section Across the Gutter on the South West Side of the Project
- FMC – Section Across the Gutter on the South East Side of the Project
- FMD – Section Across the Gutter on the North East Side of the Project
- FME – Section Across the Swale on the South East Side of the Project
- FMF – Section Across the Swale on the South West Side of the Project

APPENDIX C
(Reference Material)

- DS # 3029 "Drainage Study for Meadows Mall Inventory Storage Yard" prepared by KJE Consulting Engineers. October 2001.
- DS # 4999 "E. W. Griffith ES Replacement" prepared by Lochsa, October 2018.

APPENDIX D
(Plans and Details)

- General Notes Sheet
- Grading Plans
- Detail Sheets

APPENDIX A
(Hydrology)

- Existing Condition HEC-1 Analysis
- Developed Condition HEC-1 Analysis
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- Rainfall & Curve Number Calculations
- Standard Form 4
- CCRFD Tc Excerpt
- CCRFD Routing Excerpt

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X          X
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XXX
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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

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9......10

              1           ID    TECHNICAL DRAINAGE STUDY FOR MEADOW
MULTIFAMILY PROJECT
              2           ID                      CLARK COUNTY, NEVADA
              3           ID
              4           ID
              5           ID
              6           ID    EXISTING CONDITION FOR 10-YEAR AND 100-
YEAR STORM EVENTS
              7           ID    FILENAME:EX.TXT
              8           ID
              9           ID    JR RATIOS
             10           ID    1.00 100-YEAR NO DARF
             11           ID    0.57 10-YEAR NO DARF
             12           ID
                          *DIAGRAM
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             14           IO       5
             15           IN       5
             16           JR    PREC    0.57    1.00
                          *

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             18           KM   EXISTING ONSITE BASIN ONX1
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             20           PB    2.77
             21           PC    .000    .020    .057    .070    .087
.108    .124    .130    .130    .130
             22           PC    .130    .130    .130    .133    .140
.142    .148    .158    .172    .181
             23           PC    .190    .197    .199    .200    .201
.204    .214    .229    .241    .249
             24           PC    .251    .256    .270    .278    .281
.283    .295    .322    .352    .409
             25           PC    .499    .590    .710    .744    .781
.812    .819    .835    .851    .856
             26           PC    .860    .868    .876    .888    .910
.926    .937    .950    .970    .976
             27           PC    .982    .985    .987    .989    .990
.993    .993    .994    .995    .998
             28           PC    .998    .999    1.00
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             30           UD    .126
                          *

             31           KK   ONX2
             32           KM   EXISTING ONSITE BASIN ONX2
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             35           UD    .159
                          *

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             39           LS       0      85
             40           UD    .139
                          *

             41           KK   CPX1
             42           KM   COMBINE ONX1, ONX2, ONX3
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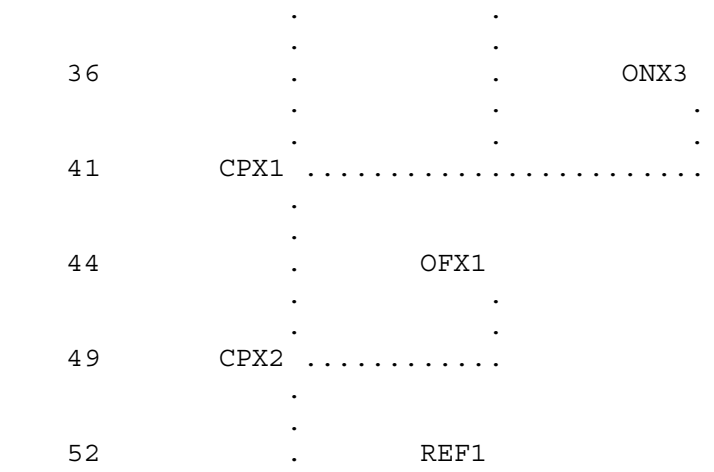

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             45           KM   EXISTING OFFSITE BASIN OFX1
             46           BA   .3177
             47           LS       0      93.6
             48           UD    .426
                          *

             49           KK   CPX2
             50           KM   COMBINE CPX1, AND OFX1
             51           HC       2
                          *

             52           KK   REF1
             53           KM   REF FLOW OF AL14
             54           BA   0.457
             55           LS       0      93.6
             56           UD    .523
                          *
             57           ZZ
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                 SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

    17        ONX1
                 .
                 .
    31           .       ONX2
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(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

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TECHNICAL DRAINAGE STUDY FOR MEADOW MULTIFAMILY PROJECT

CLARK COUNTY, NEVADA

EXISTING CONDITION FOR 10-YEAR AND 100-YEAR STORM EVENTS

FILENAME:EX.TXT

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1.00 100-YEAR NO DARF
0.57 10-YEAR NO DARF

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                        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

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                        NPLAN           1  NUMBER OF PLANS

      JR          MULTI-RATIO OPTION
                      RATIOS OF PRECIPITATION
                      .57      1.00
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                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


                                                                RATIOS APPLIED
TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN            RATIO 1  RATIO 2
                                                         .57     1.00

 HYDROGRAPH AT
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                                           TIME        3.58     3.58

 HYDROGRAPH AT
+                   ONX2        .01     1   FLOW           3.      10.
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HYDROGRAPH AT						
+	ONX3	.00	1	FLOW	2.	5.
				TIME	3.58	3.58
3 COMBINED AT						
+	CPX1	.02	1	FLOW	8.	20.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OFX1	.32	1	FLOW	159.	333.
				TIME	3.83	3.83
2 COMBINED AT						
+	CPX2	.33	1	FLOW	163.	342.
				TIME	3.83	3.83
HYDROGRAPH AT						
+	REF1	.46	1	FLOW	203.	425.
				TIME	4.00	3.92

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```
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

1 HEC-1 INPUT
PAGE 1

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

             1          ID    TECHNICAL DRAINAGE STUDY FOR MEADOW MULTIFAMILY PROJECT
             2          ID                     CLARK COUNTY, NEVADA
             3          ID
             4          ID
             5          ID
             6          ID    EXISTING CONDITION FOR 10-YEAR AND 100-YEAR STORM EVENTS
             7          ID    FILENAME:DEV.DAT
             8          ID
             9          ID    JR RATIOS
            10          ID    1.00 100-YEAR NO DARF
            11          ID    0.57 10-YEAR NO DARF
            12          ID
                       *DIAGRAM
            13          IT       5 01JAN00       0     144
            14          IO       5
            15          IN       5
            16          JR    PREC    0.26    0.57    1.00
```

```
                     *

            17       KK    OND1
            18       KM   DEVELOPED ONSITE BASIN OND1
            19       BA   .00024
            20       PB    2.77
            21       PC    .000    .020    .057    .070    .087    .108    .124    .130
.130    .130
            22       PC    .130    .130    .130    .133    .140    .142    .148    .158
.172    .181
            23       PC    .190    .197    .199    .200    .201    .204    .214    .229
.241    .249
            24       PC    .251    .256    .270    .278    .281    .283    .295    .322
.352    .409
            25       PC    .499    .590    .710    .744    .781    .812    .819    .835
.851    .856
            26       PC    .860    .868    .876    .888    .910    .926    .937    .950
.970    .976
            27       PC    .982    .985    .987    .989    .990    .993    .993    .994
.995    .998
            28       PC    .998    .999    1.00
            29       LS       0      85
            30       UD    .102
                     *
            31       ZW   C=FLOW
                     *

            32       KK   OND2
            33       KM   DEVELOPED ONSITE BASIN OND2
            34       BA   .00037
            35       LS       0      98
            36       UD    .105
                     *
            37       ZW   C=FLOW
                     *

            38       KK   OND3
            39       KM   DEVELOPED ONSITE BASIN OND3
            40       BA   .00019
            41       LS       0      85
            42       UD    .102
                     *
            43       ZW   C=FLOW
                     *
1                                                HEC-1 INPUT
PAGE  2

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

            44       KK     CPD1
            45       KM   COMBINE OND1 - OND3
            46       HC       3
                     *

            47       KK   OND4
            48       KM   DEVELOPED ONSITE BASIN OND4
            49       BA   .0066
            50       LS       0      98
            51       UD    .160
                     *
            52       ZW   C=FLOW
                     *

            53       KK   OND5
            54       KM   DEVELOPED ONSITE BASIN OND5
            55       BA   .00273
            56       LS       0      98
            57       UD    .138
                     *
```

```
             58           ZW   C=FLOW
                          *

             59           KK   OND6
             60           KM   DEVELOPED ONSITE BASIN OND6
             61           BA   .00027
             62           LS       0      85
             63           UD    .138
                          *
             64           ZW   C=FLOW
                          *

             65           KK   OND7
             66           KM   DEVELOPED ONSITE BASIN OND7
             67           BA   .00411
             68           LS       0      98
             69           UD    .136
                          *
             70           ZW   C=FLOW
                          *

             71           KK   OND8
             72           KM   DEVELOPED ONSITE BASIN OND8
             73           BA   .00023
             74           LS       0      85
             75           UD    .126
                          *
             76           ZW   C=FLOW
                          *
1                                                  HEC-1 INPUT
PAGE  3

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

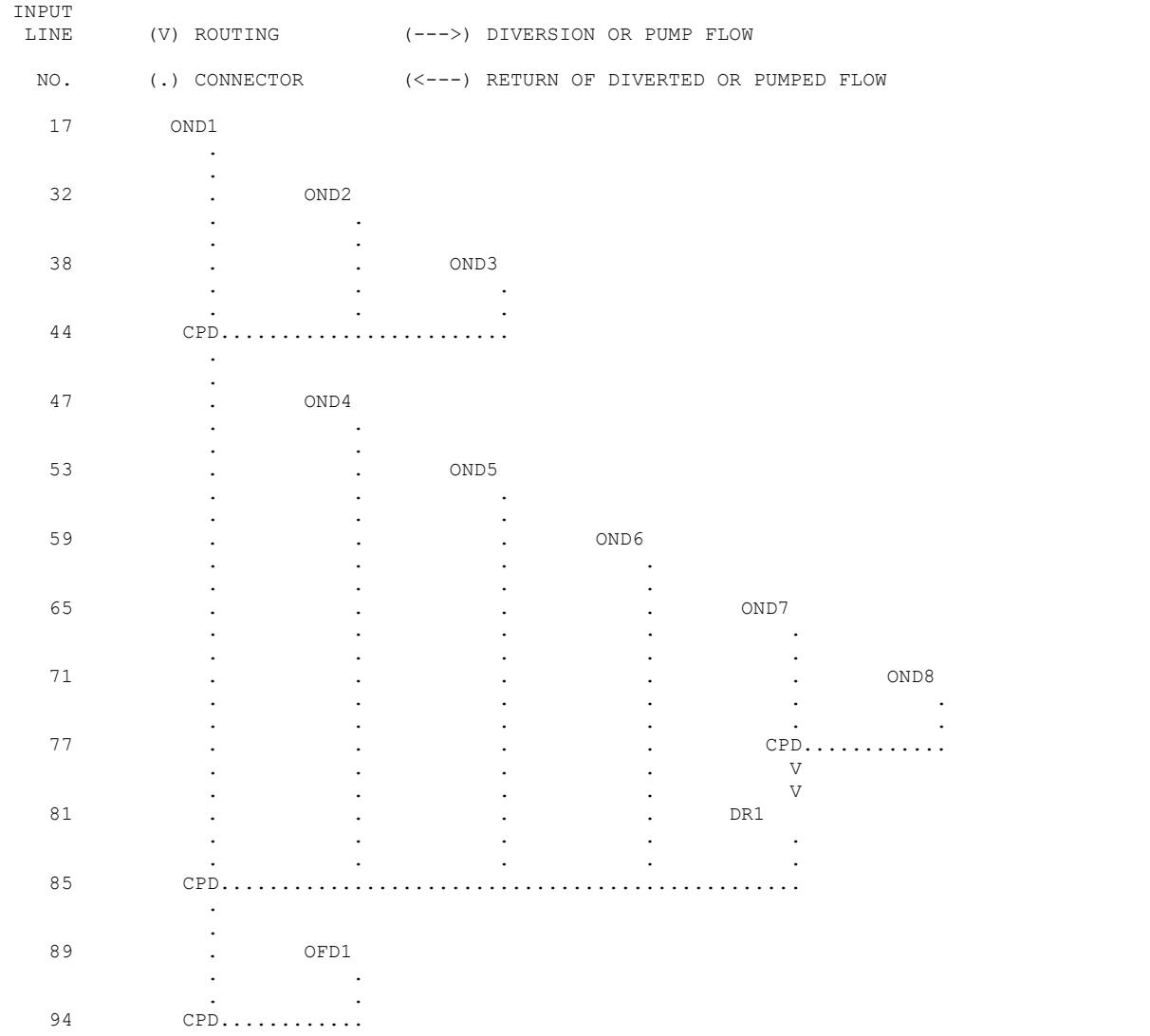
             77           KK     CPD2
             78           KM   COMBINE OND7 and OND8
             79           HC       2
                          *
             80           ZW   C=FLOW
                          *

             81           KK  DR1
             82           KM   Routing Fr/Thru DR1
             83           RD     565  0.0063   0.016           TRAP    1.0    10.0
                          *
             84           ZW   C=FLOW
                          *

             85           KK     CPD3
             86           KM   COMBINE CPD1, DR1(CPD2), OND4, OND5, OND6
             87           HC       5
                          *
             88           ZW   C=FLOW
                          *

             89           KK   OFD1
             90           KM   DEVELOPED OFFSITE BASIN OFD1
             91           BA   .3177
             92           LS       0      93.6
             93           UD    .426
                          *

             94           KK     CPD4
             95           KM   COMBINE CPD3 and OFD1
             96           HC       2
                          *
             97           ZZ
1
                 SCHEMATIC DIAGRAM OF STREAM NETWORK
```




```
1****************************************
****************************************
 *                                      *                                      *
*
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *                                      *
U.S. ARMY CORPS OF ENGINEERS     *
 *               JUN   1998             *                                      *
HYDROLOGIC ENGINEERING CENTER    *
 *            VERSION 4.1               *                                      *
609 SECOND STREET          *
 *                                      *                                      *
DAVIS, CALIFORNIA 95616       *
 *  RUN DATE   05JUN20  TIME  14:12:44   *                                      *
(916) 756-1104            *
 *                                      *                                      *
*
 ****************************************
****************************************
```

CLARK COUNTY, NEVADA

EXISTING CONDITION FOR 10-YEAR AND 100-YEAR STORM EVENTS
FILENAME:DEV.DAT

JR RATIOS
1.00 100-YEAR NO DARF
0.57 10-YEAR NO DARF

```
 14 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      1JAN 0  STARTING DATE
                      ITIME        0000  STARTING TIME
                         NQ         144  NUMBER OF HYDROGRAPH ORDINATES
                     NDDATE      1JAN 0  ENDING DATE
                     NDTIME        1155  ENDING TIME
                     ICENT           19  CENTURY MARK

                  COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   11.92 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
                    .26       .57      1.00
  -----DSS---ZOPEN:  Existing File Opened,  File: DEV.DSS
                     Unit:  71;  DSS Version: 6-JG
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND1/FLOW/31DEC1899/5MIN/+1/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND1/FLOW/01JAN1900/5MIN/+1/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND1/FLOW/31DEC1899/5MIN/+2/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND1/FLOW/01JAN1900/5MIN/+2/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND1/FLOW/31DEC1899/5MIN/+3/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND1/FLOW/01JAN1900/5MIN/+3/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND2/FLOW/31DEC1899/5MIN/+1/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND2/FLOW/01JAN1900/5MIN/+1/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND2/FLOW/31DEC1899/5MIN/+2/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND2/FLOW/01JAN1900/5MIN/+2/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND2/FLOW/31DEC1899/5MIN/+3/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND2/FLOW/01JAN1900/5MIN/+3/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND3/FLOW/31DEC1899/5MIN/+1/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND3/FLOW/01JAN1900/5MIN/+1/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND3/FLOW/31DEC1899/5MIN/+2/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND3/FLOW/01JAN1900/5MIN/+2/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND3/FLOW/31DEC1899/5MIN/+3/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND3/FLOW/01JAN1900/5MIN/+3/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND4/FLOW/31DEC1899/5MIN/+1/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND4/FLOW/01JAN1900/5MIN/+1/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND4/FLOW/31DEC1899/5MIN/+2/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND4/FLOW/01JAN1900/5MIN/+2/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND4/FLOW/31DEC1899/5MIN/+3/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND4/FLOW/01JAN1900/5MIN/+3/
-----DSS---ZWRITE Unit  71; Vers.    4:  //OND5/FLOW/31DEC1899/5MIN/+1/
```

```
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND5/FLOW/01JAN1900/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND5/FLOW/31DEC1899/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND5/FLOW/01JAN1900/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND5/FLOW/31DEC1899/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND5/FLOW/01JAN1900/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND6/FLOW/31DEC1899/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND6/FLOW/01JAN1900/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND6/FLOW/31DEC1899/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND6/FLOW/01JAN1900/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND6/FLOW/31DEC1899/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND6/FLOW/01JAN1900/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND7/FLOW/31DEC1899/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND7/FLOW/01JAN1900/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND7/FLOW/31DEC1899/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND7/FLOW/01JAN1900/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND7/FLOW/31DEC1899/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND7/FLOW/01JAN1900/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND8/FLOW/31DEC1899/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND8/FLOW/01JAN1900/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND8/FLOW/31DEC1899/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND8/FLOW/01JAN1900/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND8/FLOW/31DEC1899/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //OND8/FLOW/01JAN1900/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //CPD/FLOW/31DEC1899/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //CPD/FLOW/01JAN1900/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //CPD/FLOW/31DEC1899/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //CPD/FLOW/01JAN1900/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //CPD/FLOW/31DEC1899/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    4:  //CPD/FLOW/01JAN1900/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    3:  //DR1/FLOW/31DEC1899/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    3:  //DR1/FLOW/01JAN1900/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    3:  //DR1/FLOW/31DEC1899/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    3:  //DR1/FLOW/01JAN1900/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    3:  //DR1/FLOW/31DEC1899/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    3:  //DR1/FLOW/01JAN1900/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    5:  //CPD/FLOW/31DEC1899/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    5:  //CPD/FLOW/01JAN1900/5MIN/+1/
 -----DSS---ZWRITE Unit  71; Vers.    5:  //CPD/FLOW/31DEC1899/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    5:  //CPD/FLOW/01JAN1900/5MIN/+2/
 -----DSS---ZWRITE Unit  71; Vers.    5:  //CPD/FLOW/31DEC1899/5MIN/+3/
 -----DSS---ZWRITE Unit  71; Vers.    5:  //CPD/FLOW/01JAN1900/5MIN/+3/
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	RATIO 2	RATIO 3
					.26	.57	1.00
HYDROGRAPH AT							
+	OND1	.00	1	FLOW	0.	0.	0.
				TIME	3.58	3.58	3.50
HYDROGRAPH AT							
+	OND2	.00	1	FLOW	0.	0.	1.
				TIME	3.50	3.50	3.50
HYDROGRAPH AT							
+	OND3	.00	1	FLOW	0.	0.	0.
				TIME	3.58	3.58	3.50
3 COMBINED AT							
+	CPD	.00	1	FLOW	0.	0.	1.
				TIME	3.50	3.50	3.50
HYDROGRAPH AT							
+	OND4	.01	1	FLOW	3.	7.	12.

```
                                        TIME         3.58     3.58     3.58

 HYDROGRAPH AT
+                  OND5        .00     1   FLOW          1.       3.       5.
                                        TIME         3.58     3.58     3.58

 HYDROGRAPH AT
+                  OND6        .00     1   FLOW          0.       0.       0.
                                        TIME         3.58     3.58     3.58

 HYDROGRAPH AT
+                  OND7        .00     1   FLOW          2.       4.       8.
                                        TIME         3.58     3.58     3.58

 HYDROGRAPH AT
+                  OND8        .00     1   FLOW          0.       0.       0.
                                        TIME         3.58     3.58     3.58

  2 COMBINED AT
+                    CPD       .00     1   FLOW          2.       4.       8.
                                        TIME         3.58     3.58     3.58

 ROUTED TO
+                  DR1         .00     1   FLOW          2.       4.       8.
                                        TIME         3.58     3.58     3.58

  5 COMBINED AT
+                    CPD       .01     1   FLOW          6.      14.      26.
                                        TIME         3.58     3.58     3.58

 HYDROGRAPH AT
+                  OFD1        .32     1   FLOW         43.     159.     333.
                                        TIME         3.92     3.83     3.83

  2 COMBINED AT
+                    CPD       .33     1   FLOW         45.     165.     345.
                                        TIME         3.83     3.83     3.83
1
                                        SUMMARY OF KINEMATIC WAVE - MUSKINGUM-CUNGE ROUTING
                                            (FLOW IS DIRECT RUNOFF WITHOUT BASE FLOW)
                                                                                INTERPOLATED
TO                                                                                                  COMPUTATION
INTERVAL
            ISTAQ    ELEMENT      DT       PEAK    TIME TO     VOLUME      DT       PEAK    TIME
TO     VOLUME
                                                      PEAK
PEAK

                                  (MIN)     (CFS)      (MIN)     (IN)     (MIN)     (CFS)
(MIN)       (IN)

           FOR PLAN = 1  RATIO=  .00
             DR1     MANE         4.12      1.72    218.10       .50      5.00      1.66
215.00         .50


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .1150E+00 EXCESS= .0000E+00 OUTFLOW= .1151E+00 BASIN
STORAGE= .2601E-03 PERCENT ERROR=   -.3


           FOR PLAN = 1  RATIO=  .00
             DR1     MANE         3.00      4.26    216.00      1.32      5.00      4.19
215.00        1.32


 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3022E+00 EXCESS= .0000E+00 OUTFLOW= .3022E+00 BASIN
STORAGE= .3102E-03 PERCENT ERROR=   -.1


           FOR PLAN = 1  RATIO=  .00
```

```
            DR1     MANE         2.83      7.73    215.00      2.49      5.00      7.72
215.00        2.49

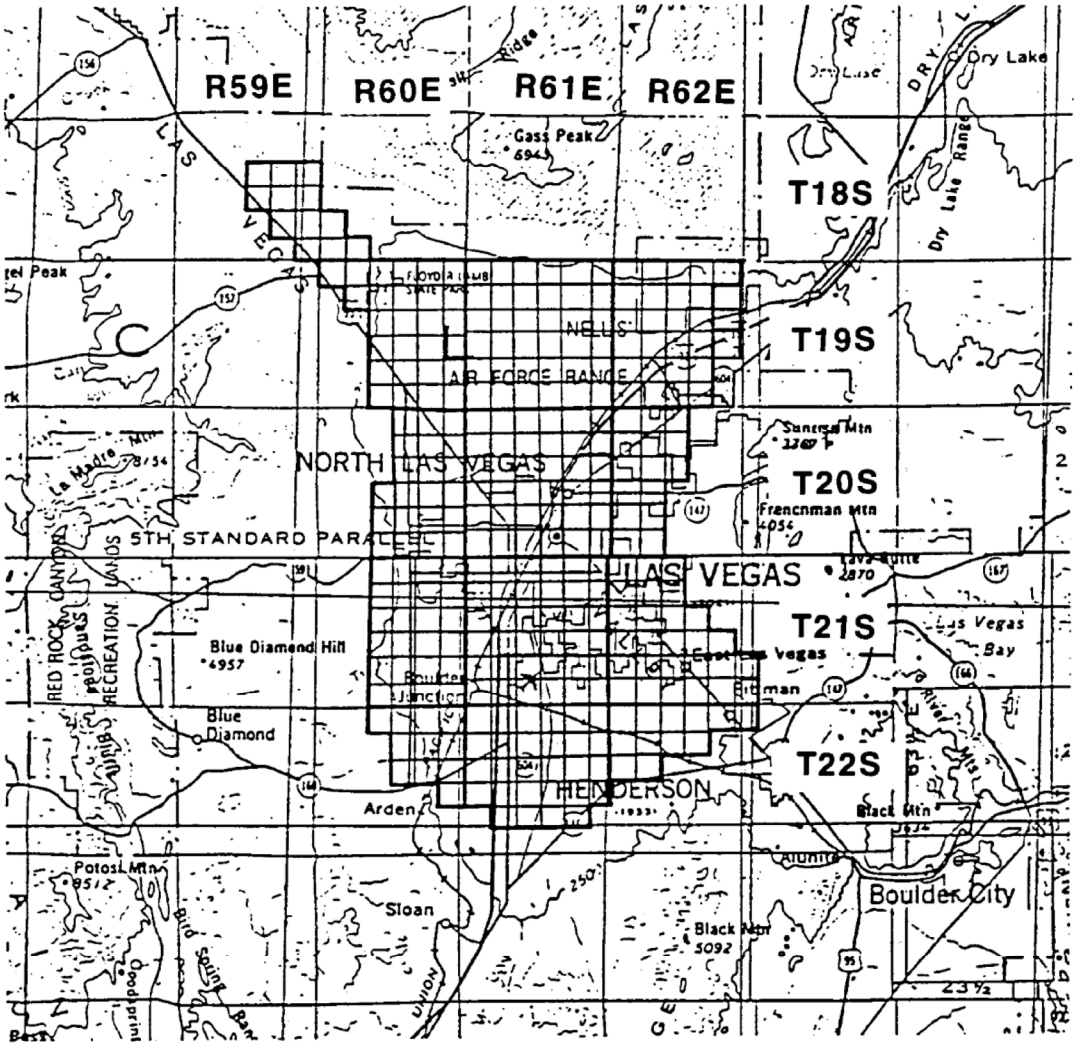

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .5704E+00 EXCESS= .0000E+00 OUTFLOW= .5704E+00 BASIN
STORAGE= .3040E-03 PERCENT ERROR=   -.1




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


   -----DSS---ZCLOSE Unit:  71,   File: DEV.DSS
              Pointer Utilization:   .26
              Number of Records:     66
              File Size:    132.9  Kbytes
              Percent Inactive:    .0
```

McCARRAN AIRPORT RAINFALL AREA



TOWNSHIP	RANGE	SECTIONS	TOWNSHIP	RANGE	SECTIONS
18 South	59 East	13-15,22-26,36	20 South	62 East	4-9,16-20,29-32
18 South	60 East	30-32	21 South	60 East	1-4,9-16,21-28,33-36
19 South	60 East	1-6,8-16,21-28,33-36	21 South	61 East	ALL SECTIONS
19 South	61 East	ALL SECTIONS	21 South	62 East	4-9,15-23, 25-36
19 South	62 East	2-11,14-23,27-34	22 South	60 East	1-4,10-15,24
20 South	60 East	1-3,10-15,21-28,33-36	22 South	61 East	1-24,26-29
20 South	61 East	ALL SECTIONS	22 South	62 East	1-10,17-18

Notes:
1. Refer to Table 505 and Figure 516 Depth-Duration- Frequency values in the McCarran Airport Rainfall Area.
2. Refer to Table 506 and Figure 517 for Time-Intensity-Frequency values on the McCarran Airport Rainfall Area.

Revision	Date

WRC ENGINEERING

REFERENCE:
USACE, Los Angeles District, 1988

FIGURE 513

DEPTH-DURATION-FREQUENCY VALUES FOR McCARRAN AIRPORT RAINFALL AREA

(IN INCHES)

	RECURRENCE INTERVAL					
TIME	2-YR	5-YR	10-YR	25-YR	50-YR	100-YR
5 min.	0.15	0.27	0.35	0.46	0.54	0.63
10 min.	0.25	0.44	0.57	0.74	0.89	1.02
15 min.	0.33	0.57	0.74	0.97	1.15	1.32
30 min.	0.44	0.78	1.01	1.31	1.55	1.79
1 hour	0.52	0.89	1.15	1.50	1.78	2.06
2 hour	0.59	1.01	1.30	1.70	2.01	2.30
3 hour	0.64	1.08	1.39	1.82	2.15	2.48
6 hour	0.72	1.22	1.58	2.05	2.41	2.77
24 hour (TR-55)	1.20	1.60	1.80	2.40	2.70	2.96

NOTE: 1. Refer to Figure 513 for a description and drawing of the area included in the McCarran Airport Rainfall Area.

2. The 24 hour values presented above are for use with TR-55 only.

3. Table 501 adjustments not required.

Revision	Date

SIX-HOUR STORM DISTRIBUTIONS

Storm Time (In Minutes)	Percent of Total Storm Depth SDN3	SDN4	SDN5	Storm Time (In Minutes)	Percent of Total Storm Depth SDN3	SDN4	SDN5
0	0.0	0.0	0.0	185	32.2	37.6	43.0
5	2.0	2.0	2.0	190	35.2	41.5	47.7
10	5.7	5.8	5.9	195	40.9	46.2	51.4
15	7.0	7.5	8.0	200	49.9	53.0	56.1
20	8.7	9.9	11.0	205	59.0	61.0	63.0
25	10.8	12.6	14.4	210	71.0	71.0	71.0
30	12.4	13.7	15.0	215	74.4	73.2	72.0
35	13.0	14.5	16.0	220	78.1	75.6	73.1
40	13.0	14.9	16.8	225	81.2	78.2	75.2
45	13.0	15.1	17.1	230	81.9	79.9	77.9
50	13.0	15.5	18.0	235	83.5	81.3	79.0
55	13.0	15.6	18.2	240	85.1	82.3	79.5
60	13.0	15.9	18.7	245	85.6	83.0	80.4
65	13.3	16.2	19.0	250	86.0	83.5	81.0
70	14.0	16.9	19.7	255	86.8	84.4	82.0
75	14.2	17.2	20.2	260	87.6	85.1	82.6
80	14.8	17.9	21.0	265	88.8	86.4	84.0
85	15.8	18.9	22.0	270	91.0	88.5	85.9
90	17.2	20.1	23.0	275	92.6	90.8	88.9
95	18.1	21.1	24.1	280	93.7	92.4	91.0
100	19.0	22.0	25.0	285	95.0	94.4	93.8
105	19.7	22.8	25.9	290	97.0	96.8	96.6
110	19.9	23.2	26.5	295	97.6	97.3	97.0
115	20.0	24.0	28.0	300	98.2	97.8	97.4
120	20.1	24.6	29.0	305	98.5	98.2	97.9
125	20.4	25.2	30.0	310	98.7	98.4	98.1
130	21.4	26.0	30.5	315	98.9	98.6	98.3
135	22.9	26.9	30.9	320	99.0	98.8	98.5
140	24.1	27.6	31.0	325	99.3	99.1	98.9
145	24.9	28.3	31.7	330	99.3	99.2	99.0
150	25.1	28.6	32.1	335	99.4	99.3	99.2
155	25.6	29.2	32.7	340	99.5	99.4	99.3
160	27.0	30.2	33.3	345	99.8	99.7	99.6
165	27.8	31.2	34.6	350	99.8	99.8	99.7
170	28.1	32.1	36.1	355	99.9	99.9	99.9
175	28.3	33.2	38.1	360	100.0	100.0	100.0
180	29.5	35.2	40.8				

Notes:
1. For drainage areas less than 8 square miles in size, use SDN 3.
2. For drainage areas greater than or equal to 8 square miles and less than 12 square miles in size, use SDN 4.
3. For drainage areas greater than or equal to 12 square miles, use SDN 5.
4. A graphical representation of these values is presented on **Figure 515**.

Revision	Date

REFERENCE:

TABLE 503

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Las Vegas Valley Area, Nevada, Part of Clark County

Meadows Multifamily



March 16, 2020

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (https://offices.sc.egov.usda.gov/locator/app?agency=nrcs) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report
Soil Map



Map Scale: 1:2,110 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 30 60 120 180

Feet: 0 100 200 400 600

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 11N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Las Vegas Valley Area, Nevada, Part of Clark County
Survey Area Data: Version 14, Sep 16, 2019

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Sep 26, 2013—Feb 25, 2014

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background

MAP LEGEND

MAP INFORMATION

imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
615	Urban land	9.6	100.0%
Totals for Area of Interest		**9.6**	**100.0%**

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Las Vegas Valley Area, Nevada, Part of Clark County

615—Urban land

Map Unit Composition

Urban land: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Urban Land

Setting

Landform: Valleys
Down-slope shape: Convex
Across-slope shape: Convex

Properties and qualities

Frequency of flooding: Rare

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Curve Number Matrix

SOIL MAP UNIT	HYDROLOGIC SOIL GROUP					LAND USE CATEGORY INDEX NUMBER												
	A	B	C	D	ROCK OUTCROP	1	2	3	4	5	6	7	8	9	10	11	12	13
	CN --->					63	47	57	60	62	74	84	89	92	86	92	71	30
		CN --->				77	66	73	74	76	83	89	93	94	91	94	81	30
			CN --->			85	77	82	83	84	88	92	95	95	93	95	87	30
				CN --->		88	83	86	87	88	91	94	96	96	95	96	90	30
					CN --->	90	90	92	92	92	94	96	96	97	96	97	94	30
	%	%	%	%	%	SOIL TYPE COMPOSITE CN FOR LAND USE CATEGORY												
1301	0	0	0	100	0	88.0	83.0	86.0	87.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1302	35	20	0	45	0	77.0	67.0	73.0	75.0	76.0	83.0	89.0	93.0	94.0	91.0	94.0	82.0	30.0
1305	5	0	35	60	0	86.0	79.0	83.0	84.0	85.0	89.0	93.0	95.0	96.0	94.0	96.0	88.0	30.0
1307	10	0	30	60	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	96.0	93.0	96.0	87.0	30.0
1313	8	68	0	24	0	79.0	68.0	75.0	76.0	78.0	84.0	90.0	93.0	94.0	91.0	94.0	82.0	30.0
1314	80	5	0	15	0	67.0	53.0	62.0	65.0	67.0	77.0	86.0	91.0	92.0	88.0	92.0	74.0	30.0
1320	0	2	0	83	15	88.0	83.0	87.0	87.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1323	0	0	0	85	15	88.0	84.0	87.0	88.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	91.0	30.0
1325	100	0	0	0	0	63.0	47.0	57.0	60.0	62.0	74.0	84.0	89.0	92.0	86.0	92.0	71.0	30.0
1326	100	0	0	0	0	63.0	47.0	57.0	60.0	62.0	74.0	84.0	89.0	92.0	86.0	92.0	71.0	30.0
1340	9	0	0	71	20	86.0	81.0	85.0	85.0	86.0	90.0	93.0	95.0	96.0	94.0	96.0	89.0	30.0
1341	0	100	0	0	0	77.0	66.0	73.0	74.0	76.0	83.0	89.0	93.0	94.0	91.0	94.0	81.0	30.0
1342	0	7	0	78	15	88.0	83.0	86.0	87.0	87.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1360	15	0	0	35	50	85.0	81.0	84.0	85.0	86.0	90.0	93.0	95.0	96.0	94.0	96.0	89.0	30.0
1380	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1390	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1400	0	0	0	100	0	88.0	83.0	86.0	87.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1415	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1417	5	0	55	10	30	86.0	80.0	84.0	85.0	86.0	89.0	93.0	95.0	96.0	94.0	96.0	89.0	30.0
1419	35	0	55	10	0	78.0	67.0	74.0	75.0	77.0	83.0	89.0	93.0	94.0	91.0	94.0	82.0	30.0
1440	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1450	1	0	0	89	10	88.0	83.0	86.0	87.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1484	0	0	0	100	0	88.0	83.0	86.0	87.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1500	60	0	0	35	5	73.0	61.0	69.0	71.0	73.0	81.0	88.0	92.0	93.0	89.0	93.0	79.0	30.0
1501	100	0	0	0	0	63.0	47.0	57.0	60.0	62.0	74.0	84.0	89.0	92.0	86.0	92.0	71.0	30.0
1502	60	0	0	40	0	73.0	61.0	69.0	71.0	72.0	80.0	88.0	92.0	93.0	89.0	93.0	79.0	30.0
1505	55	0	0	40	5	74.0	63.0	70.0	72.0	74.0	81.0	88.0	92.0	94.0	90.0	94.0	80.0	30.0
1506	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1508	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1510	10	0	0	55	35	86.0	82.0	85.0	86.0	87.0	90.0	93.0	95.0	96.0	94.0	96.0	89.0	30.0
1540	100	0	0	0	0	63.0	47.0	57.0	60.0	62.0	74.0	84.0	89.0	92.0	86.0	92.0	71.0	30.0
1541	4	0	0	76	20	87.0	83.0	86.0	87.0	87.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1542	60	0	30	10	0	72.0	59.0	67.0	69.0	71.0	80.0	87.0	92.0	93.0	89.0	93.0	78.0	30.0
1545	60	0	10	30	0	73.0	60.0	68.0	70.0	72.0	80.0	88.0	92.0	93.0	89.0	93.0	78.0	30.0
1600	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1605	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1610	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1615	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1630	0	0	0	100	0	88.0	83.0	86.0	87.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1635	7	0	5	63	25	87.0	82.0	85.0	86.0	87.0	90.0	94.0	95.0	96.0	94.0	96.0	89.0	30.0
1640	0	0	0	10	90	90.0	90.0	91.0	91.0	92.0	94.0	96.0	96.0	97.0	96.0	97.0	94.0	30.0
1645	0	0	100	0	0	85.0	77.0	82.0	83.0	84.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1674	27	26	0	45	2	78.0	69.0	75.0	76.0	78.0	84.0	90.0	93.0	94.0	91.0	94.0	83.0	30.0
1700	0	0	3	93	4	88.0	83.0	86.0	87.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1710	2	89	0	9	0	78.0	67.0	74.0	75.0	77.0	83.0	89.0	93.0	94.0	91.0	94.0	82.0	30.0
1731	10	2	0	88	0	85.0	79.0	83.0	84.0	85.0	89.0	93.0	95.0	96.0	94.0	96.0	88.0	30.0
1732	3	0	0	96	1	87.0	82.0	85.0	86.0	87.0	90.0	94.0	95.0	96.0	94.0	96.0	89.0	30.0
1753	0	8	0	90	2	87.0	81.0	85.0	86.0	87.0	90.0	93.0	95.0	96.0	94.0	96.0	89.0	30.0
1850	0	0	0	94	6	88.0	83.0	86.0	87.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	90.0	30.0
1853	0	0	0	85	15	88.0	84.0	87.0	88.0	88.0	91.0	94.0	96.0	96.0	95.0	96.0	91.0	30.0
1871	17	0	0	83	0	84.0	76.0	81.0	82.0	83.0	88.0	92.0	95.0	95.0	93.0	95.0	87.0	30.0
1999	100	0	0	0	0	63.0	47.0	57.0	60.0	62.0	74.0	84.0	89.0	92.0	86.0	92.0	71.0	30.0

TIME OF CONCENTRATION

STANDARD FORM 4

DEVELOPMENT: Meadows Multifamily CALCULATED BY: RDB DATE: 3/26/2004

SUB-BASIN DATA				INITIAL / OVERLAND TIME (t_i)			TRAVEL TIME (t_t)					t_c CHECK (URBANIZED BASINS)		FINAL t_c	REMARKS	
DES.	K	AREA	AREA	LEN.	SLOPE	t_i	LEN	SLOPE	VEL (V_1)	VEL (V_2)	t_t	TOTAL LENGTH	t_c=(L/180) +10		CN	T_{LAG}
		Ac	Sq Mi	Ft	%	Min	Ft	%	fps	fps	Min	Ft	Min	Min		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10a)	(10b)	(11)	(12)	(13)	(14)	(15)	(16)
EXISTING ONSITE																
ONX1	0.9036	1.59	0.0025	355	2.50	4.91	960	0.75	1.75	2.65	7.66			12.56	98.0	0.126
ONX2	0.732	5.22	0.0082	500	2.50	10.91	380	0.75	1.28	N/A	4.94			15.85	85.0	0.159
ONX3	0.732	2.82	0.0044	400	0.90	13.72	10	0.75	1.28	N/A	0.13			13.85	85.0	0.139
DEVELOPED ONSITE																
OND1	0.7320	0.15	0.00024	35	0.01	18.19	290	0.00	0.05	N/A	103.27	325	11.81	11.81	85.0	0.118
OND2	0.9036	0.24	0.00037	40	0.01	10.38	230	0.04	0.40	N/A	9.49	270	11.50	11.50	98.0	0.115
OND3	0.7320	0.12	0.00019	35	0.01	18.19	65	0.00	0.05	N/A	23.15	100	10.56	10.56	85.0	0.106
OND4	0.9036	4.23	0.00660	60	0.03	9.37	1025	0.01	0.14	0.22	98.78	1085	16.03	16.03	98.0	0.160
OND5	0.9036	1.75	0.00273	170	0.02	18.69	520	0.00	0.13	0.19	66.95	690	13.83	13.83	98.0	0.138
OND6	0.7320	0.17	0.00027	170	0.01	40.09	520	0.00	0.09	0.19	90.82	690	13.83	13.83	85.0	0.138
OND7	0.9036	2.63	0.00411	185	0.02	19.50	470	0.01	0.16	N/A	50.06	655	13.64	13.64	98.0	0.136
OND8	0.7320	0.34	0.00053	15	0.01	11.91	480	0.01	0.11	N/A	69.78	495	12.75	12.75	85.0	0.128
EXISTING OFFSITE																
OFX1	0.84552	203.30	0.3177	100	1.00	4.58	8000	1.40	2.39	3.62	38.01			42.59	93.6	0.426
REF1	0.84552	292.71	0.4574	100	1.00	4.58	10100	1.40	2.39	3.62	47.68			52.26	93.6	0.523

	Travel Time Velocity Formulas*		* - See CCRFCD HC&DDM Sec. 602.1
K = 0.0132*CN-0.39 $t_l = t_c*0.6$	Existing	Developed	For the travel time (T_t) calculations:
t_l = 1.8(1.1-K)L^1/2/S^1/3	V_1 = 14.8*(S/100)^1/2	V_1 = 20.2*(S/100)^1/2	V_1 applies to the first 500 feet of travel distance
Velocity obtained from Manning's Equation	V_2 = 29.4*(S/100)^1/2	V_2 = 30.6*(S/100)^1/2	V_2 applies to the remaining travel distance

Note:

Composite CN:

N/A Soil Type: D

	Q_{100}	Q_{10}
ONX1	5	3
ONX2	10	3
ONX3	5	2
OFX1	333	159
CPX1	20	8
CPX2	342	163

	Q_{100}	Q_{10}
OND1	0	0
OND2	1	0
OND3	0	0
CPD1	1	0
OND4	12	7
OND5	5	3
OND6	0	0

	Q_{100}	Q_{10}
OND7	8	4
OND8	0	0
CPD2	8	4
DR1	8	4
CPD3	26	14
OFD1	333	159
CPD4	345	165

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

TIME OF CONCENTRATION

ATKINS

File: FORM4.XLSX

2018 Las Vegas Valley Master Plan Update

Central Watershed

Ultimate Conditions

BY: MK

DATE: 9/10/18

SUB-BASIN DATA						INITIAL / OVERLAND TIME (Ti)			TRAVEL TIME (Tt)					Tc	Tc Check	Tlag	REMARKS
DESIG: (1)	DEV./EX. (D or E)	CN	K (2)	AREA Ac (3)	AREA Mi^2	INITIAL LENGTH Feet (4)	SLOPE % (5)	Ti Min (6)	TRAVEL LENGTH Feet (7)	SLOPE % (8)	V1 VELOCITY FPS (9a)	V2 VELOCITY FPS (9b)	Tt Min (10)	Min (13)	Tc = (L/180)+10 Min (14)	Tlag= 0.6Tc/60 Hours	RAINFALL Q100 Inches
1-GOLF	D	89.1	0.7856	231.84	0.362	100	1.0	5.7	7200	2.4	3.1	4.8	26.1	31.7	50.6	**0.317**	2.83
2a-OAK-C	D	89.5	0.7919	201.19	0.314	100	1.0	5.5	5400	1.5	2.5	3.7	25.3	30.9	40.6	**0.309**	2.77
3a-OAK-C	D	88.1	0.7734	276.67	0.432	100	1.0	5.9	5400	2.0	2.9	4.3	21.8	27.7	40.6	**0.277**	2.77
3-ELP-C	D	91.7	0.8211	133.60	0.209	100	1.0	5.0	4900	2.0	2.9	4.3	19.9	24.9	37.8	**0.249**	2.77
3-HOLM-C	D	92.0	0.8249	211.75	0.331	100	1.0	5.0	7500	2.1	3.0	4.5	28.9	33.9	52.2	**0.339**	2.77
5-OAK-C	D	90.9	0.8094	148.69	0.232	100	1.0	5.2	4000	1.5	2.5	3.7	18.9	24.2	32.8	**0.242**	2.77
A1-C1	D	92.7	0.8337	199.05	0.311	100	1.0	4.8	6600	0.9	1.9	2.9	39.8	44.6	47.2	**0.446**	2.77
AL00A	D	92.1	0.8258	303.33	0.474	100	1.0	4.9	6700	1.6	2.5	3.8	30.2	35.2	47.8	**0.352**	2.77
AL00A-C	D	93.9	0.8501	147.32	0.230	100	1.0	4.5	5900	1.7	2.6	4.0	25.7	30.2	43.3	**0.302**	2.77
AL01A	D	91.8	0.8220	78.62	0.123	100	1.0	5.0	4500	1.7	2.6	4.0	20.1	25.1	35.6	**0.251**	2.77
AL01B-C	D	92.1	0.8256	234.97	0.367	100	1.0	4.9	7000	1.3	2.3	3.5	34.8	39.7	49.4	**0.397**	2.77
AL04-C	D	91.7	0.8200	114.77	0.179	100	1.0	5.0	6200	1.5	2.4	3.7	29.2	34.2	45.0	**0.342**	2.77
AL05-C	D	92.0	0.8242	149.55	0.234	100	1.0	5.0	6100	1.2	2.2	3.3	32.3	37.3	44.4	**0.373**	2.77
AL09	D	91.7	0.8200	62.33	0.097	100	1.0	5.0	3500	0.8	1.8	2.7	22.9	27.9	30.0	**0.279**	2.77
AL09-C	D	92.0	0.8245	103.41	0.162	100	1.0	5.0	4500	1.7	2.6	4.0	19.9	24.8	35.6	**0.248**	2.77
AL10-C	D	92.7	0.8335	30.64	0.048	100	1.0	4.8	3200	0.9	2.0	3.0	19.4	24.2	28.3	**0.242**	2.77
AL11-C	D	94.7	0.8602	83.23	0.130	100	1.0	4.3	3800	0.7	1.6	2.5	27.2	31.5	31.7	**0.315**	2.77
AL13-3	D	91.7	0.8202	37.63	0.059	100	1.0	5.0	2100	1.2	2.2	3.3	11.8	16.8	22.2	**0.168**	2.77
AL14	D	93.6	0.8454	292.71	0.457	100	1.0	4.6	10100	1.4	2.4	3.6	47.8	52.4	66.7	**0.524**	2.77
AL16	D	92.9	0.8356	94.84	0.148	100	1.0	4.8	5200	1.2	2.2	3.3	27.7	32.4	39.4	**0.324**	2.77
AL90-C	D	93.9	0.8491	109.51	0.171	100	1.0	4.5	4100	0.7	1.7	2.6	27.8	32.3	33.3	**0.323**	2.77
AL92	D	84.5	0.7251	274.80	0.429	100	1.0	6.7	6900	0.5	1.4	2.2	54.6	61.3	48.9	**0.489**	2.77
AL93-B	D	90.6	0.8057	148.92	0.233	100	1.0	5.3	5643	0.5	1.4	2.2	45.0	50.3	41.9	**0.419**	2.77
AL93-C	D	89.5	0.7913	186.58	0.292	100	1.0	5.6	5384	0.6	1.6	2.4	38.5	44.0	40.5	**0.405**	2.77
AL95-C	D	86.6	0.7536	122.83	0.192	100	1.0	6.2	4500	1.1	2.1	3.2	24.6	30.8	35.6	**0.308**	2.77
AL96-C	D	93.9	0.8498	115.94	0.181	100	1.0	4.5	4400	0.6	1.5	2.3	33.7	38.2	35.0	**0.350**	2.77
B1-C	D	94.4	0.8556	175.13	0.274	100	1.0	4.4	7000	0.9	1.9	2.8	42.7	47.1	49.4	**0.471**	2.77
B3-1	D	93.2	0.8408	196.06	0.306	100	1.0	4.7	7200	1.0	2.1	3.1	39.8	44.5	50.6	**0.445**	2.77
B3-2	D	93.1	0.8390	195.96	0.306	100	1.0	4.7	5450	0.6	1.6	2.5	38.7	43.4	40.8	**0.408**	2.77
BN03-C	D	90.6	0.8064	322.44	0.504	100	1.0	5.3	7550	2.3	3.0	4.6	28.3	33.6	52.5	**0.336**	2.77
BN06-C	D	86.4	0.7509	217.37	0.340	100	1.0	6.3	4400	3.1	3.5	5.4	14.5	20.8	35.0	**0.208**	2.77
BN08	D	89.4	0.7898	134.33	0.210	100	1.0	5.6	4900	0.6	1.5	2.3	37.8	43.4	37.8	**0.378**	2.77
BN09	D	79.2	0.6550	149.34	0.233	100	1.0	8.0	5500	0.4	1.3	2.0	47.5	55.5	41.1	**0.411**	2.77
BN10-C	D	89.0	0.7845	164.43	0.257	100	1.0	5.7	5400	0.4	1.2	1.9	50.6	56.3	40.6	**0.406**	2.77

Reach	Length (L) ft	Slope (ft/ft)	n		Shape	Bottom Width/ Diameter (ft)	Side Slope (H:V)
RCH14B	900	0.0044	0.015	0	TRAP	7	0
RCCH14B	1700	0.005	0.015	0	TRAP	18	0
RCOK13	2450	0.0091	0.015	0	TRAP	19	0
RPR1	2900	0.0103	0.016	0	TRAP	0	50
RDCR2	4300	0.015	0.013	0	CIRC	4	0
RCAL01A	1100	0.0125	0.013	0	CIRC	3	0
RAL04-C	1150	0.004	0.015	0	TRAP	6	0
RCCUS	1900	0.01	0.013	0	CIRC	11.5	0
RCAL05-C	1280	0.014	0.013	0	CIRC	6	0
RCBR3	905	0.01	0.013	0	CIRC	11.5	0
RAL09-C	2400	0.0083	0.016	0	TRAP	0	50
RDGSR	4600	0.0152	0.016	0	TRAP	0	50
RCAL11-C	2500	0.0194	0.013	0	CIRC	11.5	
RCAL10-C	1180	0.0158	0.015	0	TRAP	8	1
RAL14	1300	0.008	0.016	0	TRAP	0	50
RAL09	1100	0.009	0.016	0	TRAP	0	50
RCCH14A	1370	0.005	0.015	0	TRAP	10	0
RCAL16	973	0.0189	0.015	0	TRAP	18	1
RCCAL16	525	0.004	0.015	0	TRAP	40	0
RCAL90-C	1030	0.004	0.015	0	TRAP	45	0
MEADOWOT	1145	0.0072	0.015	0	TRAP	14	0
RDAL00A	3428	0.004	0.015	0	TRAP	7	0
RAINBWOT	665	0.0188	0.013	0	CIRC	3.5	0
RCLC01-C	4630	0.0108	0.013	0	CIRC	5	0
RCCWA02C	6870	0.0249	0.015	0	TRAP	8	0
RCLC11-C	2140	0.0174	0.015	0	TRAP	12	0
RWA10D	1775	0.005	0.015	0	TRAP	10	0
RCCLC14	3875	0.0106	0.015	0	TRAP	24	0
RCRMEDET	2305	0.005	0.015	0	TRAP	28	0
ROG011AD	3200	0.0171	0.016	0	TRAP	0	50
RWA01	5300	0.0142	0.016	0	TRAP	0	50
RCWA04	5980	0.0159	0.013	0	CIRC	5.5	
RCWA10NW	4420	0.0119	0.015	0	TRAP	8	0
RWA13D	3100	0.0077	0.015	0	TRAP	12	0
RCCLC16	3333	0.006	0.015	0	TRAP	28	0
RCLC20-C	2765	0.0082	0.015	0	TRAP	24	0
RCCAL93	2410	0.0015	0.015	0	TRAP	43	0
RDCLC21	4785	0.009	0.015	0	TRAP	12	0
RDCH59	3000	0.0217	0.013	0	CIRC	4	0
RCV1-C	2750	0.015	0.015	0	TRAP	24	0
RCX-C1	2540	0.015	0.015	0	TRAP	24	0
RM	3900	0.0064	0.016	0	TRAP	0	50
RCN-C	2600	0.0068	0.015	0	TRAP	30	0

APPENDIX B
(Hydraulics)

- FMA – Section Across the Gutter on Meadows Ln
- FMB – Section Across the Gutter on the South West Side of the Project
- FMC – Section Across the Gutter on the South East Side of the Project
- FMD – Section Across the Gutter on the North East Side of the Project
- FME – Section Across the Swale on the South East Side of the Project
- FMF – Section Across the Swale on the South West Side of the Project

Worksheet for FMA Meadows Ln

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01000	ft/ft
Discharge	342.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	0.50
0+00	0.00
0+30	1.00
0+60	0.00
0+60	0.50

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 0.50)	(0+60, 0.50)	0.016

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	1.26	ft
Elevation Range	0.00 to 1.00 ft	
Flow Area	45.52	ft²
Wetted Perimeter	62.55	ft
Hydraulic Radius	0.73	ft
Top Width	60.00	ft
Normal Depth	1.26	ft
Critical Depth	1.50	ft

Worksheet for FMA Meadows Ln

Results

Critical Slope		0.00398	ft/ft
Velocity		7.51	ft/s
Velocity Head		0.88	ft
Specific Energy		2.14	ft
Froude Number		1.52	
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	1.26	ft
Critical Depth	1.50	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00398	ft/ft

Worksheet for FMB Parking Lot West

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01000	ft/ft
Discharge	5.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	1.00
0+00	0.50
0+24	0.00
0+26	-0.75
0+27	0.00
0+42	0.29
0+42	0.79

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1.00)	(0+42, 0.79)	0.016

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	0.85	ft
Elevation Range	-0.75 to 1.00 ft	
Flow Area	1.96	ft²
Wetted Perimeter	13.59	ft
Hydraulic Radius	0.14	ft
Top Width	13.24	ft

Worksheet for FMB Parking Lot West

Results

Normal Depth		0.85	ft
Critical Depth		0.88	ft
Critical Slope		0.00728	ft/ft
Velocity		2.55	ft/s
Velocity Head		0.10	ft
Specific Energy		0.95	ft
Froude Number		1.17	
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		0.85	ft
Critical Depth		0.88	ft
Channel Slope		0.01000	ft/ft
Critical Slope		0.00728	ft/ft

Worksheet for FMC Parking Lot East

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01000	ft/ft
Discharge	11.90	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	1.00
0+00	0.50
0+24	0.00
0+26	-0.75
0+27	0.00
0+42	0.29
0+42	0.79

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1.00)	(0+42, 0.79)	0.016

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	0.97	ft
Elevation Range	-0.75 to 1.00 ft	
Flow Area	4.24	ft²
Wetted Perimeter	25.49	ft
Hydraulic Radius	0.17	ft
Top Width	25.10	ft

Worksheet for FMC Parking Lot East

Results

Normal Depth		0.97	ft
Critical Depth		1.00	ft
Critical Slope		0.00675	ft/ft
Velocity		2.81	ft/s
Velocity Head		0.12	ft
Specific Energy		1.09	ft
Froude Number		1.20	
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		0.97	ft
Critical Depth		1.00	ft
Channel Slope		0.01000	ft/ft
Critical Slope		0.00675	ft/ft

Worksheet for FMD Parking Lot East

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Channel Slope	0.01000	ft/ft
Discharge	15.00	ft³/s

Section Definitions

Station (ft)	Elevation (ft)
0+00	1.00
0+00	0.50
0+24	0.00
0+26	-0.75
0+27	0.00
0+42	0.29
0+42	0.79

Roughness Segment Definitions

Start Station	Ending Station	Roughness Coefficient
(0+00, 1.00)	(0+42, 0.79)	0.016

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	1.00	ft
Elevation Range	-0.75 to 1.00 ft	
Flow Area	5.12	ft²
Wetted Perimeter	28.76	ft
Hydraulic Radius	0.18	ft
Top Width	28.37	ft

Worksheet for FMD Parking Lot East

Results

Normal Depth		1.00	ft
Critical Depth		1.04	ft
Critical Slope		0.00657	ft/ft
Velocity		2.93	ft/s
Velocity Head		0.13	ft
Specific Energy		1.14	ft
Froude Number		1.22	
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	1.00	ft
Critical Depth	1.04	ft
Channel Slope	0.01000	ft/ft
Critical Slope	0.00657	ft/ft

APPENDIX C
(Reference Material)

- DS # 3029 “Drainage Study for Meadows Mall Inventory Storage Yard” prepared by KJE Consulting Engineers. October 2001.
- DS # 4999 “E. W. Griffith ES Replacement” prepared by Lochsa, October 2018.

DS# 3029

DS INDEX

APN 139-31-510-016, 139-31-111-006

PROJECT Meadows Mall Inventory

SUBMITTAL Drainage & Grading Plans

running.doc

DS #: 4999

APN: 139.31.203.001

PROJECT: E.W. Griffith ES Replacement

SUBMITTAL: 2nd

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: October 10, 2018
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: **E.W. Griffith ES Replacement**			**COPIES TO:** Lochsa Engineering
Cross Streets:	NEC of Essex Drive & Mayflower Lane			Clark County School District
File Number:	F:\Depot\DSMemos\DS4999B.doc			Bart Anderson, P.E., DevCo
Parcel Number:	139-31-203-001			
Zoning Action:	SDR-72789 & VAR-71788			
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	5/31/2018	6/14/2018	Not Approved	$400.00	496414: $400
2nd Submittal	9/27/2018	10/10/2018	See Comments Below	$400.00	499480: $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. **Sheet C4.01**: Clearly identify the location of the proposed wall opening at the north end of *Essex Drive* and call out the invert elevation of the wall opening at 78.00 FG/INV.
2. The proposed 30'-wide public drainage easement (privately maintained) at *Meadows Lane* must be granted and recorded prior to the final approval of the improvement plans.

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
WSP/AYS

T/R/S: T20S/R61E/31
AREA M-31

Addendum To Technical Drainage Study For E. W. Griffith ES Replacement

September 2018

Prepared for:

Gensler
Justin Lam
3883 Howard Hughes Parkway
Suite 650
Las Vegas, NV 89169
(702) 348-9418

Prepared by:

LOCHSA ENGINEERING
6345 South Jones Boulevard, Suite 100
Las Vegas, Nevada 89118
(702) 365-9312

Lochsa Job # 171208

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: E.W. Griffith ES Replacement Date: September 3, 2018

Location of Development: a) Descriptive (Cross Streets) North/South: Essex Drive

East/West: Mayflower Lane

b) Section: 31 Township: 20 South Range: 61 East

c) APN : 139-31-203-001

Name of Owner: Justin Lam

Telephone No.: 702-348-9418 Fax No.: E-Mail Address:

Address: 3883 Howard Hughes Parkway, Suite 650 Las Vegas, Nevada 89169

Contact Person-Name: Chris Blake, EI **Telephone No.:** (702) 365-9312

* **E-Mail Address:** chris.blake@lochsa.com **Fax No.:** (702) 365-9317

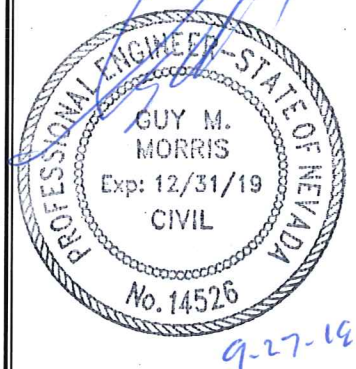
Firm: Lochsa Engineering

Address: 6345 South Jones Boulevard, Suite 100, Las Vegas, Nevada 89118

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: 8.70 +/- Acres Being Developed/Disturbed: 8.70 +/- Acres
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.): School
5. Approximate upstream land area which drains to the subject site: 13.06 +/- Acres
6. Has the site drainage been evaluated in the past? ☐ **YES** ☒ **NO** If yes, please identify documentation:
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: west side of site drains to Essex Drive, remainder of site discharges east to Revere Drive
8. Briefly describe your proposed schedule for the subject project: ASAP



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.**

Local Entity File No.

Revision	Date

REFERENCE:

STANDARD FORM 1

Updated 05/01/2008

COMMENT LETTER

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: June 16, 2018
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: **E.W. Griffith ES Replacement**			**COPIES TO:** Lochsa Engineering
Cross Streets:	NEC of Essex Drive & Mayflower Lane			Clark County School District
File Number:	F:\Depot\DSMemos\DS4999A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	139-31-203-001			
Zoning Action:	SDR-72789 & VAR-71788			
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	5/31/2018	6/14/2018	See Comments Below	$400.00	496414: $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. The ponding situation at the north end of *Essex Drive* must be mitigated with the proposed improvements. There are two situations need to be considered:
   - When the two existing drop inlets are functioning properly, they are acting like orifices because they are under sump condition. The hydraulic calculation worksheet presented in the subject drainage study is not valid because it was assuming continuous street grade. Use *Orifice Equation* to model the situation to evaluate the hydraulic head, ie, the 100-year water surface in order for the system to drain out. This situation may impact the proposed finished floor elevation of the school building and even the adjacent neighborhood. Review and revise accordingly.
   - When the two existing drop inlets are totally clogged, during a 6-hour 100-year storm event, the ponding situation can be foreseen as catastrophic. The new school and the adjacent residential houses can be inundated.

   The existing wall at the north end of *Essex Drive* must be opened up with a wrought iron fence. This must be resolved in the next submittal.
2. In *Revere Drive*, there are three locations proposed with trenching across the street noted by Construction Note 22. Explain why trenching is proposed whether it is drainage related in the next submittal.

3. Show finished floors elevations of all houses on all perimeter streets on all exhibits and grading plans.
4. Please use a mask on cross section numbers, the overlapping makes the values difficult to read.

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
WSP/AYS

T/R/S: T20S/R61E/31
AREA M-31

T 702-365-9312 | F 702-365-9317
6345 S Jones Blvd, Suite 100
Las Vegas, NV 89118

Lochsa engineering

September 26, 2018

Mr. Albert Sung, P.E.
City of Las Vegas Public Works Department
Flood Control Division
333 N Rancho Dr.
Las Vegas, NV 89106

Subject: **Addendum to the Technical Drainage Study for E.W. Griffith ES Replacement**
CLV DS4999
Parcel Number 139-31-203-001
Lochsa Job #171208

Dear Mr. Sung,

Lochsa Engineering is in receipt of your comment letter for the above referenced project. In response to your comments, the following responses are being offered:

Comment 1: The ponding situation at the north end of *Essex Drive* must be mitigated with the proposed improvements. There are two situations need to be considered:

- When the two existing drop inlets are functioning properly, they are acting like orifices because they are under sump condition. The hydraulic calculation worksheet presented in the subject drainage study is not valid because it was assuming continuous street grade. Use *Orifice Equation* to model the situation to evaluate the hydraulic head, ie, the 100-year water surface in order for the system to drain out. This situation may impact the proposed finished floor elevation of the school building and even the adjacent neighborhood. Review and revise accordingly.

- When the two existing drop inlets are totally clogged, during a 6-hour 100-year storm event, the ponding situation can be foreseen as catastrophic. The new school and the adjacent residential houses can be inundated.

The existing wall at the north end of the Essex Drive must be opened with a wrought iron fence. This must be resolved in the next submittal.

Response 1: After many meetings, it was agreed upon to provide a 15ft wide by 2ft high wall opening at the north end of Essex Drive. This is to eliminate any ponding situation just in case the two existing drop inlets were to get clogged. It is also to help the situation since we are dealing with 43cfs in the 100yr storm event. The two existing drop inlets are not sized adequately to handle the entire flow without some ponding. Please note that the opening with wrought iron bars is only 15ft wide x 2ft high, as the Association for the Homes didn't want a wrought iron fence up to the top of the wall height.

We have provided a weir analysis for the proposed block wall opening. The headwater elevation for the 15ft wide opening was 0.88ft. We have provided an additional 1.12-feet higher opening in the wall to ensure some freeboard.

Please note that this resolves an existing ponding situation for the homes and the school. This is a major improvement from the current conditions. The two (2) existing drop inlets do not have the capacity to relieve this area.

We have set the weir height (crest elevation) of the wall opening to 2178.00ft, which is 1.08ft above the top of existing grate (2176.92ft) from the existing drop inlet on the east side of Essex Drive. We have provided a grate calculation to show how much flow the drop inlet intercepts at a headwater elevation of 2178.00ft. It was determined the inlet will capture 5cfs of the total 43cfs in the 100yr storm event. Therefore, 38cfs will weir over the wall and discharge through a proposed 30ft drainage easement to Meadows Lane.

It was determined that a 30ft drainage easement is needed to handle the flow north of the 15ft wide wall opening. The flow ultimately discharges through a concrete V-ditch and into Meadows Lane north of our site. A hydraulic calculation has been provided to verify the drainage easement width

It was agreed upon Justin Lam (CCSD) and Albert Sung (CLV Flood Control) that the drainage responses will be accepted by CLV as long as we note that "Meadows will grant the opening in the wall and that the deal is currently being reviewed." This note is also added on the grading plans. This statement allows us to move forward with the review process.

Comment 2: In *Revere Drive*, there are three locations proposed with trenching across the street noted by Construction Note 22. Explain why trenching is proposed whether it is drainage related in the next submittal.

Response 2: **The three (3) trenching locations are for utility purposes only. They are not for drainage related items.**

Comment 3: Show finished floors elevations of all houses on all perimeter streets on all exhibits and grading plans.

Response 3: **Noted. See revised plans and exhibits.**

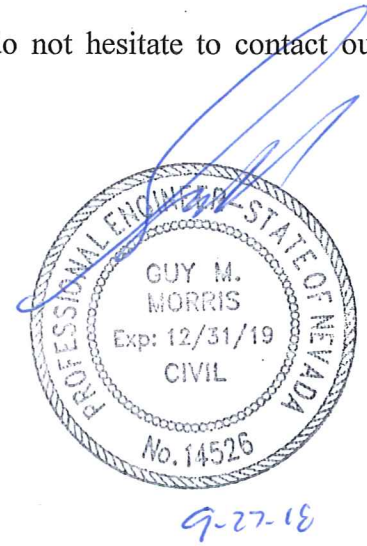
Comment 4: Please use a mask on cross section numbers, the overlapping makes the values difficult to read.

Response 4: **Noted.**

If you have any questions or comments, please do not hesitate to contact our office at your earliest convenience.

Sincerely,
LOCHSA ENGINEERING

Chris Blake, EI
Hydrologist



9-27-18

NOTICE OF FINAL ACTION

LAS VEGAS
CITY COUNCIL
CAROLYN G. GOODMAN
Mayor
LOIS TARKANIAN
Mayor Pro Tem
STAVROS S. ANTHONY
BOB COFFIN
STEVEN G. SEROKA
MICHELE FIORE

SCOTT D. ADAMS
City Manager

April 11, 2018

GRIFFITH ES

Ms. Linda Perri
School Board of Trustees
1180 Military Tribute Place
Henderson, Nevada 89074

RE: VAR-72788 [PRJ-72695] - VARIANCE RELATED TO SDR-72789 PLANNING COMMISSION MEETING OF APRIL 10, 2018

Dear Applicant:

Your request for a Variance TO ALLOW A 42-FOOT TALL BUILDING WHERE 35 FEET IS THE MAXIMUM ALLOWED; ALTERNATE BUILDING AND PARKING LOT PLACEMENT; A SIX-FOOT WIDE PERIMETER LANDSCAPE BUFFER ALONG A PORTION OF THE WEST PROPERTY LINE AND A FIVE-FOOT BUFFER ALONG THE EAST PROPERTY LINE WHERE 15 FEET IS REQUIRED; AND TO ALLOW NON-DECIDUOUS TREES IN THE PARKING LOT WHERE SUCH ARE REQUIRED on 8.70 acres at 324 Essex Drive (APN 139-31-203-001), C-V (Civic) Zone, Ward 1 (Tarkanian) [PRJ-72695], was considered by the Planning Commission on April 10, 2018.

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

Planning

1. Approval of and conformance to the Conditions of Approval for Site Development Plan Review (SDR-72789) 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.

CITY HALL
495 S. MAIN ST.
LAS VEGAS, NV 89101
702.229.6011 | VOICE
711 | TTY

cityoflasvegas
lasvegasnevada.gov

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 10, 2018** 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 23, 2018***. 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,

Paul Bengtson
Senior Management Analyst
Case Planning Division

PB:nl

cc:

Ms. Gabrielle Greer
CCSD Real Property Management
1180 Military Tribute Place
Henderson, Nevada 89074

LAS VEGAS
CITY COUNCIL
CAROLYN G. GOODMAN
Mayor
LOIS TARKANIAN
Mayor Pro Tem
STAVROS S. ANTHONY
BOB COFFIN
STEVEN G. SEROKA
MICHELE FIORE

SCOTT D. ADAMS
City Manager

April 11, 2018

Ms. Linda Perri
School Board of Trustees
1180 Military Tribute Place
Henderson, Nevada 89074

RE: SDR-72789 [PRJ-72695] - SITE DEVELOPMENT PLAN REVIEW RELATED TO VAR-72788
PLANNING COMMISSION MEETING OF APRIL 10, 2018

Dear Applicant:

Your request for a Site Development Plan Review FOR A PROPOSED TWO-STORY, 90,000 SQUARE-FOOT PUBLIC SCHOOL, PRIMARY on 8.70 acres at 324 Essex Drive (APN 139-31-203-001), C-V (Civic) Zone, Ward 1 (Tarkanian) [PRJ-72695], was considered by the Planning Commission on April 10, 2018.

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

Planning

1. A revised site plan depicting fences, walls and gates to completely secure the site shall be sumtited to the Department of Planning and Public Works for review and approval prior to the issuance of off-site permits. In no case shall the gates open into public right of way.

2. Approval of and conformance to the Conditions of Approval for Variance (VAR-72788) 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 development shall be in conformance with the site plan date stamped 04/10/18, landscape plan date stamped 04/01/18, and building elevations, date stamped 03/28/18 and 02/22/18, except as amended by conditions herein.

CITY HALL
495 S. MAIN ST.
LAS VEGAS, NV 89101
702.229.6011 | VOICE
711 | TTY

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lasvegasnevada.gov

5. 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.

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

7. A technical landscape plan, signed and sealed by a Registered Architect, Landscape Architect, Residential Designer or Civil Engineer, must be submitted prior to or at the same time application is made for a building permit. A permanent underground sprinkler system is required, and shall be permanently maintained in a satisfactory manner; the landscape plan shall include irrigation specifications. Installed landscaping shall not impede visibility of any traffic control device.

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

Public Works

9. Correct all Americans with Disabilities Act (ADA) deficiencies, if any, on the sidewalk along East Essex Drive and Revere Drive Way adjacent to this site in accordance with code requirements of Title 13.56.040 to the satisfaction of the City Engineer concurrent with development of this site. All existing paving damaged or removed by this development shall be restored at its original location and to its original width concurrent with development of this site.

10. Landscape and maintain all unimproved rights-of-way, if any, adjacent to this site. 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.

11. A Traffic Impact Analysis or other information acceptable to the City Traffic Engineer must be submitted to and approved by the Department of Public Works prior to issuance of any building or grading permits. Comply with the recommendation of the City Traffic Engineer.

12. 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.

This action by the Planning Commission on **April 10, 2018** 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 23, 2018***. 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,

Paul Bengtson
Senior Management Analyst
Case Planning Division

PB:nl

cc:

Ms. Gabrielle Greer
CCSD Real Property Management
1180 Military Tribute Place
Henderson, Nevada 89074

COMMENT #1

WEIR ANALYSIS FOR PROPOSED WALL OPENING

Weir Analysis through the Proposed Wall Opening 100-Year, Future)
Worksheet for Broad Crested Weir

Project Description	
Worksheet	BLOCK WALL OPENING (100YR)
Type	Broad Crested Weir
Solve For	Headwater Elevation

Input Data		
Discharge	38.00	cfs
Crest Elevation	78.00	ft
Tailwater Elevati	78.00	ft
Crest Surface Ty	aved	
Crest Breadth	0.67	ft
Crest Length	15.00	ft

Flow amount after D.I. capture of 5 cfs

crest elevation (bottom of weir elev.)

length of weir

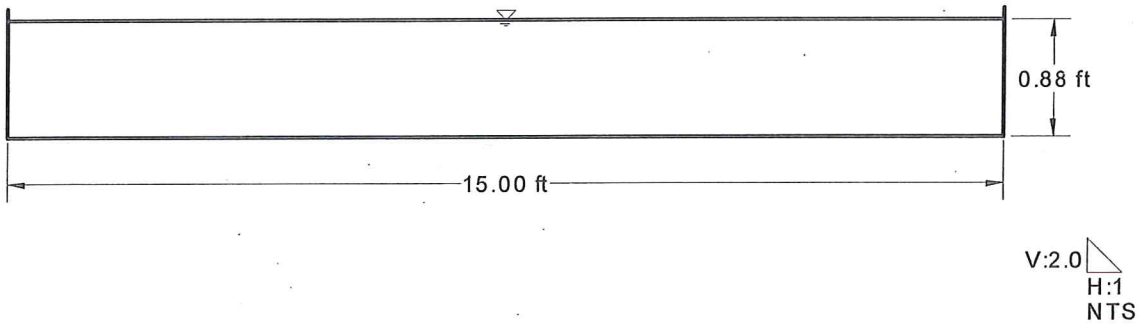
Results		
Headwater Elevation	78.88	ft
Headwater Height Above	0.88	ft
Tailwater Height Above C	0.00	ft
Discharge Coefficient	3.09	US
Submergence Factor	1.00	
Adjusted Discharge Coef	3.09	US
Flow Area	3.148	ft²
Velocity	2.89	ft/s
Wetted Perimeter	16.75	ft
Top Width	15.00	ft

HW height = .88'... we provided a 2' high opening in the wall for freeboard

Weir Analysis through the Proposed Wall Opening 100-Year, Future)
Cross Section for Broad Crested Weir

Project Description	
Worksheet	BLOCK WALL OPENING \
Type	Broad Crested Weir
Solve For	Headwater Elevation

Section Data		
Discharge	38.00	cfs
Headwater Elev	78.88	ft
Crest Elevation	78.00	ft
Tailwater Elevati	78.00	ft
Crest Surface Ty	aved	
Crest Breadth	0.67	ft
Crest Length	15.00	ft



Grate Calculation

Project: Griffith ES
Project Number: 171208
Date: September, 2018

Rating Table for the Proposed 2ft x 1.5' Grates

Orifice Equation: Q=KCA(2gh)^0.5

Effective Area of Grate: A= 0.60 x Area

2ft x 1.50ft Grate

Length of Grate (L):	2.0	ft
Width of Grate (W):	1.50	ft
Orifice Coefficient (C):	0.65	
Clogging Factor (K):	50.00%	%
Effective Area Coef. :	0.60	%

Top of Grate Elev.: **76.92**

Headwater Elevation (ft)	Head Above Grate (h) (ft)	Effective Area of Grate (A) (sf)	Flow into Grate (Q) (cfs)	
76.92	0.00	1.8	0.0	
77.12	0.20	1.8	2.1	
77.32	0.40	1.8	3.0	
77.52	0.60	1.8	3.6	
77.72	0.80	1.8	4.2	
77.92	1.00	1.8	4.7	
78.00	**1.08**	**1.8**	**4.9**	<---- Q100 from DI
78.20	1.28	1.8	5.3	
78.40	1.48	1.8	5.7	
78.60	1.68	1.8	6.1	
78.80	1.88	1.8	6.4	
79.00	2.08	1.8	6.8	
79.20	2.28	1.8	7.1	
79.40	2.48	1.8	7.4	
79.60	2.68	1.8	7.7	
79.80	2.88	1.8	8.0	
79.88	2.96	1.8	8.1	
80.38	3.46	1.8	8.7	
80.88	3.96	1.8	9.3	
81.38	4.46	1.8	9.9	
81.88	4.96	1.8	10.5	
82.38	5.46	1.8	11.0	
82.88	5.96	1.8	11.5	

weir height (crest elev.)

(inlet capture)

4.9cfs

Proposed 30ft Drainage Easement

Drainage Easement Section
Worksheet for Irregular Channel

Project Description	
Worksheet	Drainage Easement S
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	037000	ft/ft
Discharg	38.00	cfs

Options	
Current Roughness Metho	ved Lotter's Method
Open Channel Weighting	ved Lotter's Method
Closed Channel Weightin	Horton's Method

Results		
Mannings Coefficie	0.017	
Water Surface Elev	78.39	ft
Elevation Range	.00 to 78.39	
Flow Area	6.272	ft²
Wetted Perimeter	30.08	ft
Top Width	30.00	ft
Actual Depth	0.39	ft
Critical Elevation	78.55	ft
Critical Slope	0.005694	ft/ft
Velocity	6.06	ft/s
Velocity Head	0.57	ft
Specific Energy	78.96	ft
Froude Number	2.34	
Flow Type	Supercritical	

Calculation Messages:
Water elevation exceeds lowest end station by 0.70405249e-1 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+18.29	0.013
0+18.29	0+30.00	0.025

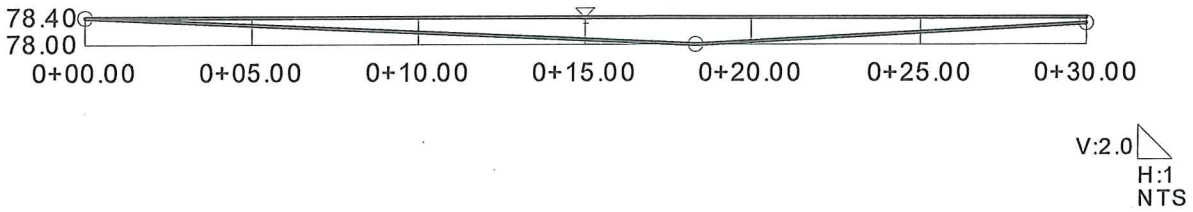
Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	78.39
0+18.29	78.00
0+30.00	78.32

Drainage Easement Section
Cross Section for Irregular Channel

Project Description	
Worksheet	Drainage Easement S
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficier	0.017	
Slope	0.037000	ft/ft
Water Surface Elev	78.39	ft
Elevation Range	.00 to 78.39	
Discharge	38.00	cfs



V:2.0
H:1
NTS

DRAINAGE EASEMENT HYDRAULIC SECTION

Drainage Easement Section
Worksheet for Irregular Channel

Project Description	
Worksheet	Drainage Easement Section
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Input Data		
Slope	.037000	ft/ft
Discharge	38.00	cfs

weir flow

Options	
Current Roughness Method	Lotter's Method
Open Channel Weighting	Lotter's Method
Closed Channel Weighting	Horton's Method

Results		
Mannings Coefficient	0.013	
Water Surface Elev	78.36	ft
Elevation Range	.00 to 78.39	
Flow Area	5.304	ft²
Wetted Perimeter	28.51	ft
Top Width	28.47	ft
Actual Depth	0.36	ft
Critical Elevation	78.55	ft
Critical Slope	0.003497	ft/ft
Velocity	7.16	ft/s
Velocity Head	0.80	ft
Specific Energy	79.16	ft
Froude Number	2.93	
Flow Type	Supercritical	

d_{100}

V_{100}

$d \times v = .36 \times 7.16 = 2.58 < 6$ OKV

Calculation Messages:
Water elevation exceeds lowest end station by 0.37296085e-1 ft.

Roughness Segments

Start Station	End Station	Mannings Coefficient
0+00.00	0+30.00	0.013

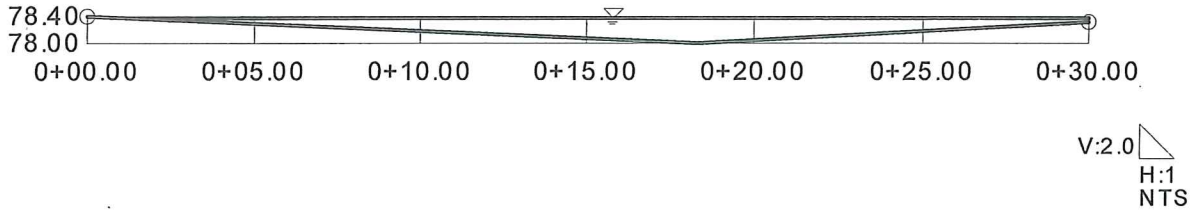
Natural Channel Points

Station (ft)	Elevation (ft)
0+00.00	78.39
0+18.29	78.00
0+30.00	78.32

Drainage Easement Section
Cross Section for Irregular Channel

Project Description	
Worksheet	Drainage Easement S
Flow Element	Irregular Channel
Method	Manning's Formula
Solve For	Channel Depth

Section Data		
Mannings Coefficie	0.013	
Slope	0.037000	ft/ft
Water Surface Elev	78.36	ft
Elevation Range	.00 to 78.39	
Discharge	38.00	cfs



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: June 16, 2018
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: **E.W. Griffith ES Replacement**			**COPIES TO:** Lochsa Engineering
Cross Streets:	NEC of Essex Drive & Mayflower Lane			Clark County School District
File Number:	F:\Depot\DSMemos\DS4999A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	139-31-203-001			
Zoning Action:	SDR-72789 & VAR-71788			
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	5/31/2018	6/14/2018	See Comments Below	$400.00	496414: $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. The ponding situation at the north end of *Essex Drive* must be mitigated with the proposed improvements. There are two situations need to be considered:
   - When the two existing drop inlets are functioning properly, they are acting like orifices because they are under sump condition. The hydraulic calculation worksheet presented in the subject drainage study is not valid because it was assuming continuous street grade. Use *Orifice Equation* to model the situation to evaluate the hydraulic head, ie, the 100-year water surface in order for the system to drain out. This situation may impact the proposed finished floor elevation of the school building and even the adjacent neighborhood. Review and revise accordingly.
   - When the two existing drop inlets are totally clogged, during a 6-hour 100-year storm event, the ponding situation can be foreseen as catastrophic. The new school and the adjacent residential houses can be inundated.

   The existing wall at the north end of *Essex Drive* must be opened up with a wrought iron fence. This must be resolved in the next submittal.
2. In *Revere Drive*, there are three locations proposed with trenching across the street noted by Construction Note 22. Explain why trenching is proposed whether it is drainage related in the next submittal.

3. Show finished floors elevations of all houses on all perimeter streets on all exhibits and grading plans.
4. Please use a mask on cross section numbers, the overlapping makes the values difficult to read.

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
WSP/AYS

T/R/S: T20S/R61E/31
AREA M-31

Onsite Flow Summary
(Interim/Developed Conditions)

100-year, 6-hour Storm

Hydraulic Cross-Section Identifier	100-Year Flow [Q100] (cfs)	100-year Velocity [v] (fps)	100-year Flow Depth [d] (ft)	100-year Velocity x Depth [v x d]
4	4	1.05	0.15	0.16

Street Flow Summary
(Interim/Developed Conditions)

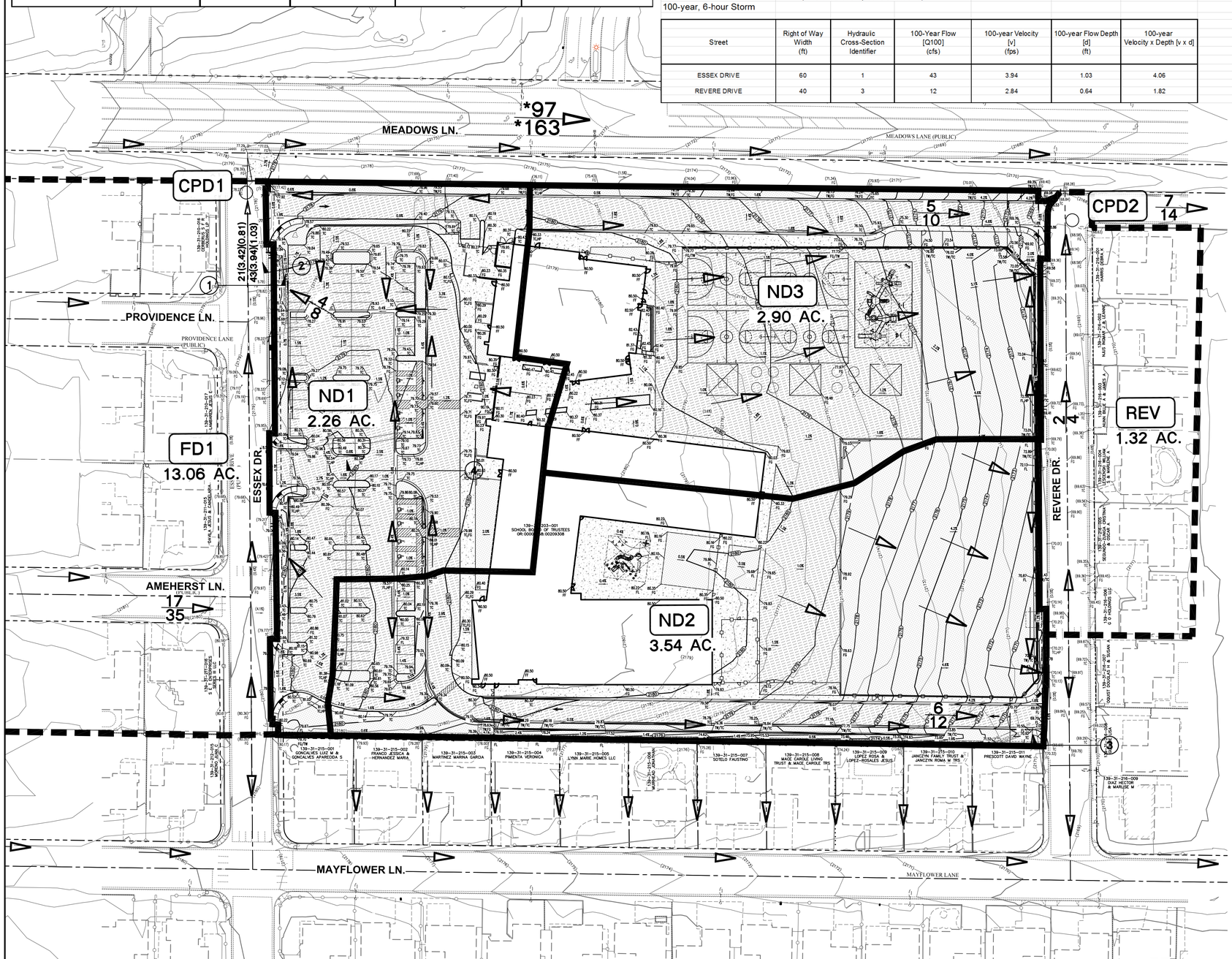
10-year, 6-hour Storm

Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	10-Year Flow [Q10] (cfs)	10-year Velocity [v] (fps)	10-year Flow Depth [d] (ft)	10-year Velocity x Depth [v x d]	Dry Lane Width (Within 1/2 ROW) (ft)
ESSEX DRIVE	60	1	21	3.42	0.81	2.77	N/A

Street Flow Summary
(Interim/Developed Conditions)

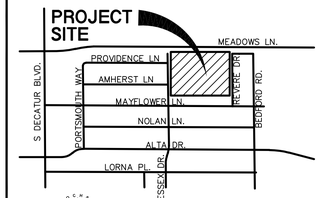
100-year, 6-hour Storm

Street	Right of Way Width (ft)	Hydraulic Cross-Section Identifier	100-Year Flow [Q100] (cfs)	100-year Velocity [v] (fps)	100-year Flow Depth [d] (ft)	100-year Velocity x Depth [v x d]
ESSEX DRIVE	60	1	43	3.94	1.03	4.06
REVERE DRIVE	40	3	12	2.84	0.64	1.82



Peak Flow Summary
Interim / Developed Condition

HEC-1 I.D.	Area (acres)	10-year Flow (cfs)	100-year Flow (cfs)	
FD1	13.06	17	35	
ND1	2.26	4	8	
CPD1	-	21	43	(FD1+ND1)
ND2	3.54	6	12	
ND3	2.90	5	10	
REV	1.32	2	4	
CPD2	-	7	14	(ND3+REV)



VICINITY MAP
NOT TO SCALE

GRAPHIC SCALE
50 0 25 50 100
(IN FEET)
1 inch = 50 ft.

DRAINAGE LEGEND

ND1	DRAINAGE BASIN LABEL
CMD1	CONCENTRATION POINT
	COMBINATION POINT
	OFFSITE BASIN BOUNDARY LINE
	ONSITE BASIN BOUNDARY
2 / 3	Q10 FLOW IN CFS (10 YR.) / Q100 FLOW IN CFS (100 YR.)
1 (1.0)(1.2) / 1 (1.0)(1.2)	Q10 (V10)(D10) / Q100 (V100)(D100)
	BASIN FLOW DIRECTION
1	HYDRAULIC CROSS-SECTION
*	REFERENCED FLOW FROM CENTRAL NEIGHBORHOOD MPU

REVISIONS:

REV.	DESCRIPTION:	DATE:

SEAL: PROFESSIONAL ENGINEER - STATE OF NEVADA - GUY M. MORRIS - EXP. 12-31-19 - CIVIL - No. 14526 - 09-26-18

DATE: 09-26-18
DRAWN BY: NMG
SUBMITTAL: CONFORMED SET
A/E PROJECT NO.: 171208

A/E: Gensler
3883 Howard Hughes Pkwy
Suite 650
Las Vegas NV 89169
Tel: 702.893.2800
Fax: 702.893.2805

CONSULTANT: Lochsa engineering
6345 South Jones Blvd.
Suite 100
Las Vegas, NV 89118
Phone (702) 365-9312
Fax (702) 365-9317
www.lochsa.com

CONSTRUCTION MGMT: DATE:
PROJECT MANAGER:
COORDINATOR:

BUILDING DEPARTMENT:
CODE COMPLIANCE:
AHERA REVIEW:

ASBESTOS WORK IS:
REQUIRED ☐ NOT REQUIRED ☐

JOB# 0001621

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702-799-8710

PROJECT: E.W. GRIFFITH ES REPLACEMENT

DRAWING TITLE: INTERIM / DEVELOPED DRAINAGE PLAN

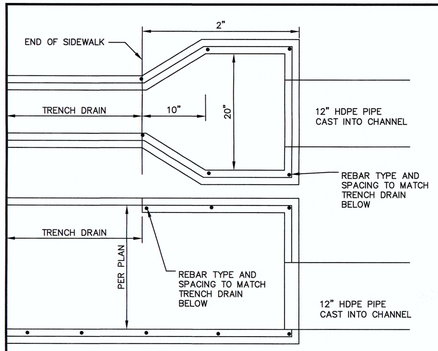
FACILITY: 412

SHEET NO: DR2
SHEET 1 OF 1

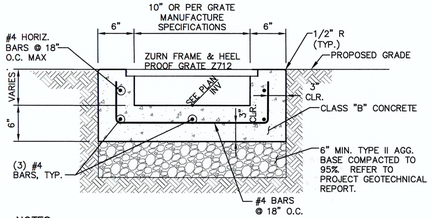
LEGEND

CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS Ⓢ = SANITARY SEWER Ⓓ = STORM DRAIN Ⓔ = ELECTRICAL Ⓣ = TELEPHONE	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								(12.34) BC		Ⓢ							BWV		
ROW LINE	SCARP LINE	PROPOSED:	2122								12.34 BC		Ⓢ							BWV		

9/27/2018 11:02 AM
T:\CAD\171208\Drawings\Drainage\DR2.dwg



12" SD CONNECTION TO TRENCH DRAIN

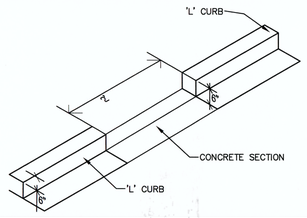


NOTES:

1. WEAKENED PLANE JOINTS REQUIRED AT 10' MAX. SPACING.
2. REFER TO PROJECT GEOTECHNICAL REPORT FOR TYPE II AGGREGATE OR SELECTED MATERIAL DEPTH AND COMPACTION, SUB-GRADE PREPARATION, MEMBRANES AND OTHER PLACEMENT RECOMMENDATIONS.

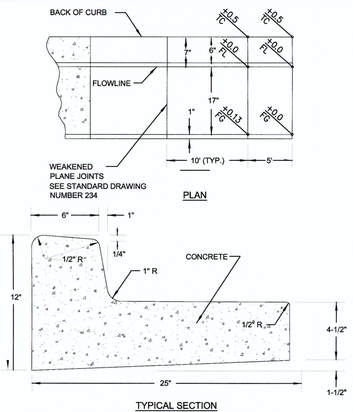
16 TRENCH DRAIN

NOT TO SCALE



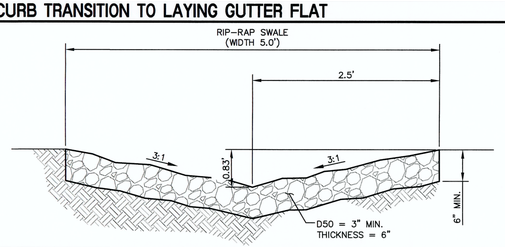
15 2' CURB OPENING

NOT TO SCALE



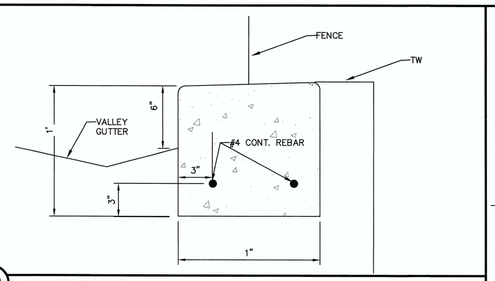
14 "L" CURB TRANSITION TO LAYING GUTTER FLAT

NOT TO SCALE



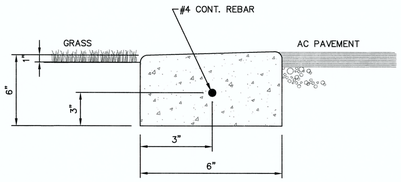
13 RIP-RAP SWALE

NOT TO SCALE



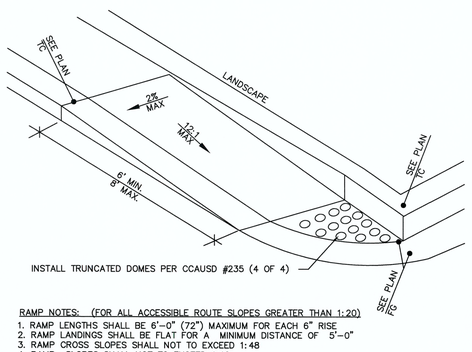
19 MOW-CURB

NOT TO SCALE



18 MOW-CURB

NOT TO SCALE

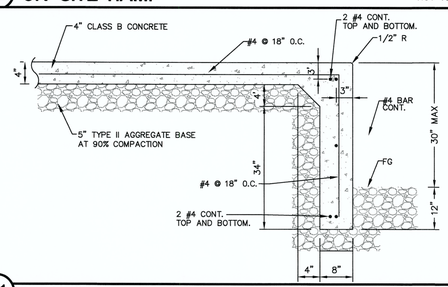


RAMP NOTES: (FOR ALL ACCESSIBLE ROUTE SLOPES GREATER THAN 1:20)

1. RAMP LENGTHS SHALL BE 6'-0" (72") MAXIMUM FOR EACH 6" RISE
2. RAMP LANDINGS SHALL BE FLAT FOR A MINIMUM DISTANCE OF 5'-0"
3. RAMP CROSS SLOPES SHALL NOT TO EXCEED 1:48
4. RAMP SLOPES SHALL NOT TO EXCEED 1:12
5. HEIGHT OF CURBS (OR EDGES) SHALL NOT TO EXCEED 6".
6. RAMP CLEAR WIDTHS TO BE 3'-0" MINIMUM.
7. RAMP HEIGHTS ARE NOT INTENDED TO EXCEED 6" IN HT. PER EA. RUN.
8. RAMP SHALL HAVE A BROOM FINISH.

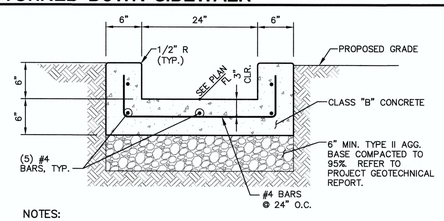
12 ON-SITE RAMP

NOT TO SCALE



11 TURNED DOWN SIDEWALK

NOT TO SCALE

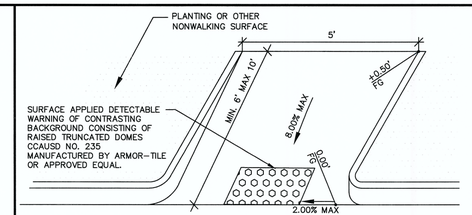


NOTES:

1. EXPANSION JOINTS REQUIRED AT ALL LOCATIONS WHERE CHANNEL MEETS CURB.
2. WEAKENED PLANE JOINTS REQUIRED AT 10' MAX. SPACING.
3. REFER TO PROJECT GEOTECHNICAL REPORT FOR TYPE II AGGREGATE OR SELECTED MATERIAL DEPTH AND COMPACTION, SUB-GRADE PREPARATION, MEMBRANES AND OTHER PLACEMENT RECOMMENDATIONS.

10 24" CONC. U-CHANNEL

NOT TO SCALE

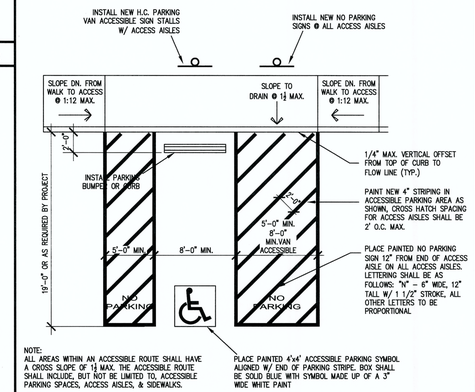


RAMP NOTES: (FOR ALL ACCESSIBLE ROUTE SLOPES GREATER THAN 1:20)

1. RAMP LENGTHS SHALL BE 6'-0" (72") MAXIMUM FOR EACH 6" RISE
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3. RAMP CROSS SLOPES SHALL NOT TO EXCEED 1:48
4. RAMP SLOPES SHALL NOT TO EXCEED 1:12
5. HEIGHT OF CURBS (OR EDGES) SHALL NOT TO EXCEED 6".
6. RAMP CLEAR WIDTHS TO BE 3'-0" MINIMUM.
7. RAMP HEIGHTS ARE NOT INTENDED TO EXCEED 6" IN HT. PER EA. RUN.
8. RAMP SHALL HAVE A BROOM FINISH.

9 ON-SITE RAMP

NOT TO SCALE

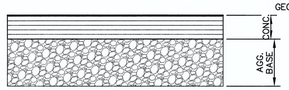


NOTE:
ALL AREAS WITHIN AN ACCESSIBLE ROUTE SHALL HAVE A CROSS SLOPE OF 1/4 MAX. THE ACCESSIBLE ROUTE SHALL INCLUDE, BUT NOT BE LIMITED TO, ACCESSIBLE PARKING SPACES, ACCESS AISLES, & SIDEWALKS.

PLACE PAINTED 4'x4' ACCESSIBLE PARKING SYMBOL ALIGNED W/ END OF PARKING STRIPE. BOX SHALL BE SOLID BLUE WITH SYMBOL MADE UP OF A 3" WIDE WHITE PAINT

8 ACCESSIBLE PARKING DETAIL

NOT TO SCALE

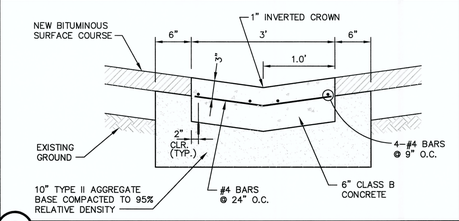


TYPE OF TRAFFIC	ASPHALT (inches)	TYPE II BASE COURSE (inches)
LIGHT DUTY	4	4
HANDICAP PARKING	6	6
TRASH AND HEAVY DUTY	7	6

1. REFER TO PROJECT GEOTECHNICAL REPORT FOR ALL SUB-GRADE PREPARATION AND COMPACTION.

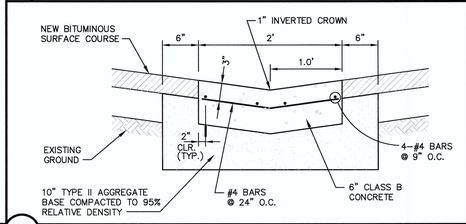
7 CONCRETE PAVEMENT SECTION

NOT TO SCALE



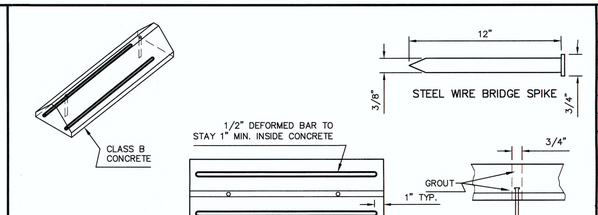
6 3' VALLEY GUTTER

NOT TO SCALE



5 2' VALLEY GUTTER

NOT TO SCALE

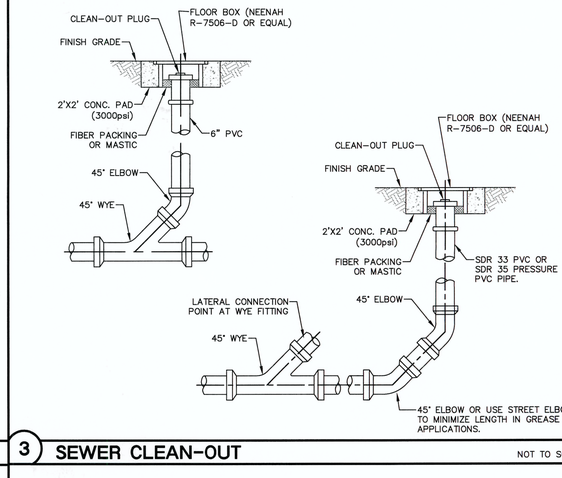


NOTES:

1. PRECAST BUMPER BLOCK TO BE USED IN PARKING LOTS ONLY.
2. GROUT HOLE BEFORE DRIVING SPIKE, FILL HOLE WITH CONCRETE MORTAR & FINISH FLUSH WITH TOP.

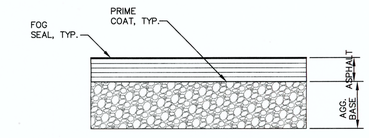
4 BUMPER BLOCK DETAIL

NOT TO SCALE



3 SEWER CLEAN-OUT

NOT TO SCALE



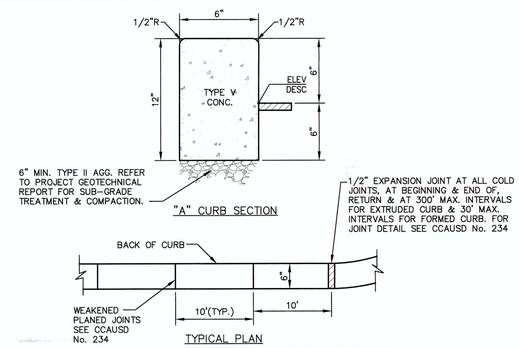
TYPE OF TRAFFIC	ASPHALT (inches)	TYPE II BASE COURSE (inches)
AUTOMOBILE AND PLAYGROUND	2.5	4
DELIVERY TRUCKS	3	5
HEAVY DUTY TRUCK	3	8

1. REFER TO PROJECT GEOTECHNICAL REPORT FOR ALL SUB-GRADE PREPARATION AND COMPACTION.

PAVEMENT SECTION AS PROPOSED IN GEOTECHNICAL REPORT PREPARED BY: NINYO AND MOORE PROJ. NO.: 304289001 DATED: 4-20-18

2 AC PAVEMENT SECTION

NOT TO SCALE



1 ON-SITE "A" TYPE CURB

NOT TO SCALE

REVISIONS:

REV.	DESCRIPTION:	DATE:

SEAL: GUY M. MORRIS, EXP. 12-31-19, CIVIL, No. 14526, REGISTERED PROFESSIONAL ENGINEER, STATE OF NEVADA — 09-26-18

DATE: 09-26-18
DRAWN BY: NMG
SUBMITTAL: CONFORMED SET
A/E PROJECT NO: 171208

A/E: Gensler — 3883 Howard Hughes Pkwy, Suite 650, Las Vegas NV 89169, Tel: 702.893.2800, Fax: 702.893.2805

CONSULTANT: Lochsa engineering — 6345 South Jones Blvd. Suite 100 Las Vegas, NV 89118, Phone (702) 385-6312, Fax (702) 385-9317, www.lochsa.com

CONSTRUCTION MGMT: DATE:
PROJECT MANAGER:
COORDINATOR:

BUILDING DEPARTMENT:
CODE COMPLIANCE:
AHERA REVIEW:

ASBESTOS WORK IS: REQUIRED ☐ NOT REQUIRED ☐

JOB# 0001621

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702-799-8710

PROJECT: E.W. GRIFFITH ES REPLACEMENT

DRAWING TITLE: DETAIL SHEETS DETAIL SHEET 1 OF 2

FACILITY: 412

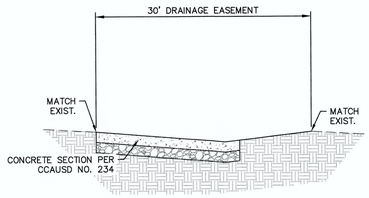
SHEET NO: C6.01

SHEET 13 OF 16

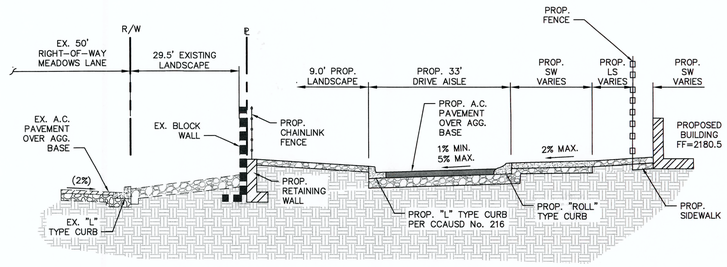
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H NOT USED

E DRAINAGE EASEMENT SECTION



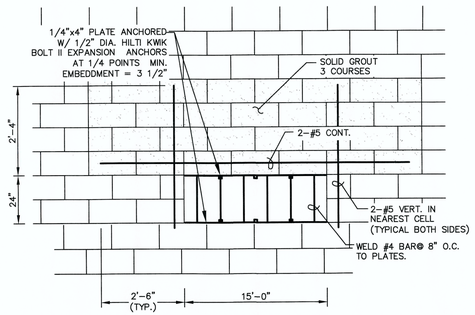
C NORTH SECTION



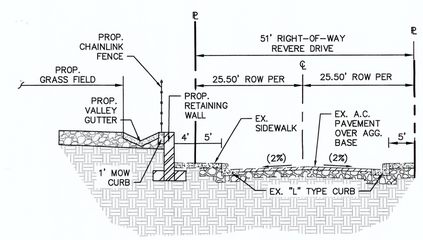
G NOT USED

1 BLOCK WALL OPENING

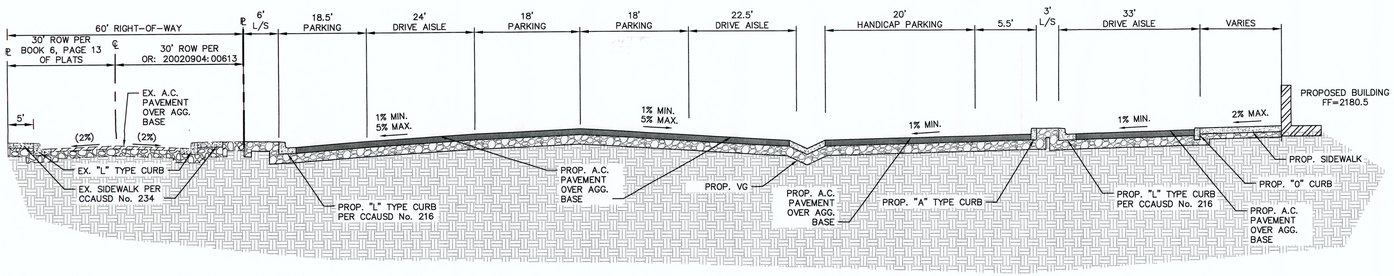
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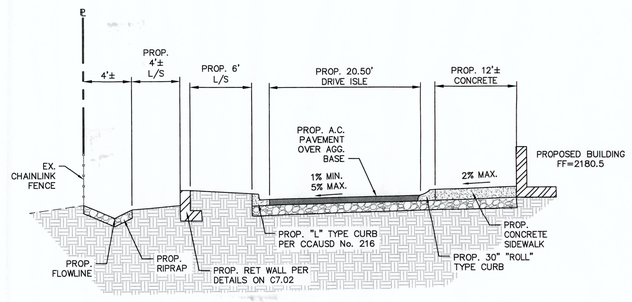
B EAST SECTION



D WEST SECTION



A SOUTH SECTION



REVISIONS:

REV.	DESCRIPTION:	DATE:

SEAL: PROFESSIONAL ENGINEER - STATE OF NEVADA — GUY M. MORRIS — EXP. 12-31-19 — CIVIL — No 14526 — 09-26-18

DATE: 09-26-18 | DRAWN BY: NMG | SUBMITTAL: CONFORMED SET | A/E PROJECT NO.: 171208

Gensler
3883 Howard Hughes Pkwy
Suite 650
Las Vegas NV 89169
Tel: 702.893.2800
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Lochsa engineering
6345 South Jones Blvd.
Las Vegas, NV 89118
Phone (702) 382-1012
Fax (702) 382-1072
www.lochsa.com

A/E:

CONSULTANT:

CONSTRUCTION MGMT:	DATE:
PROJECT MANAGER:	
COORDINATOR:	
BUILDING DEPARTMENT:	
CODE COMPLIANCE:	
AHERA REVIEW:	

ASBESTOS WORK IS:
REQUIRED ☐ NOT REQUIRED ☐

JOB# 0001621

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702-799-8710

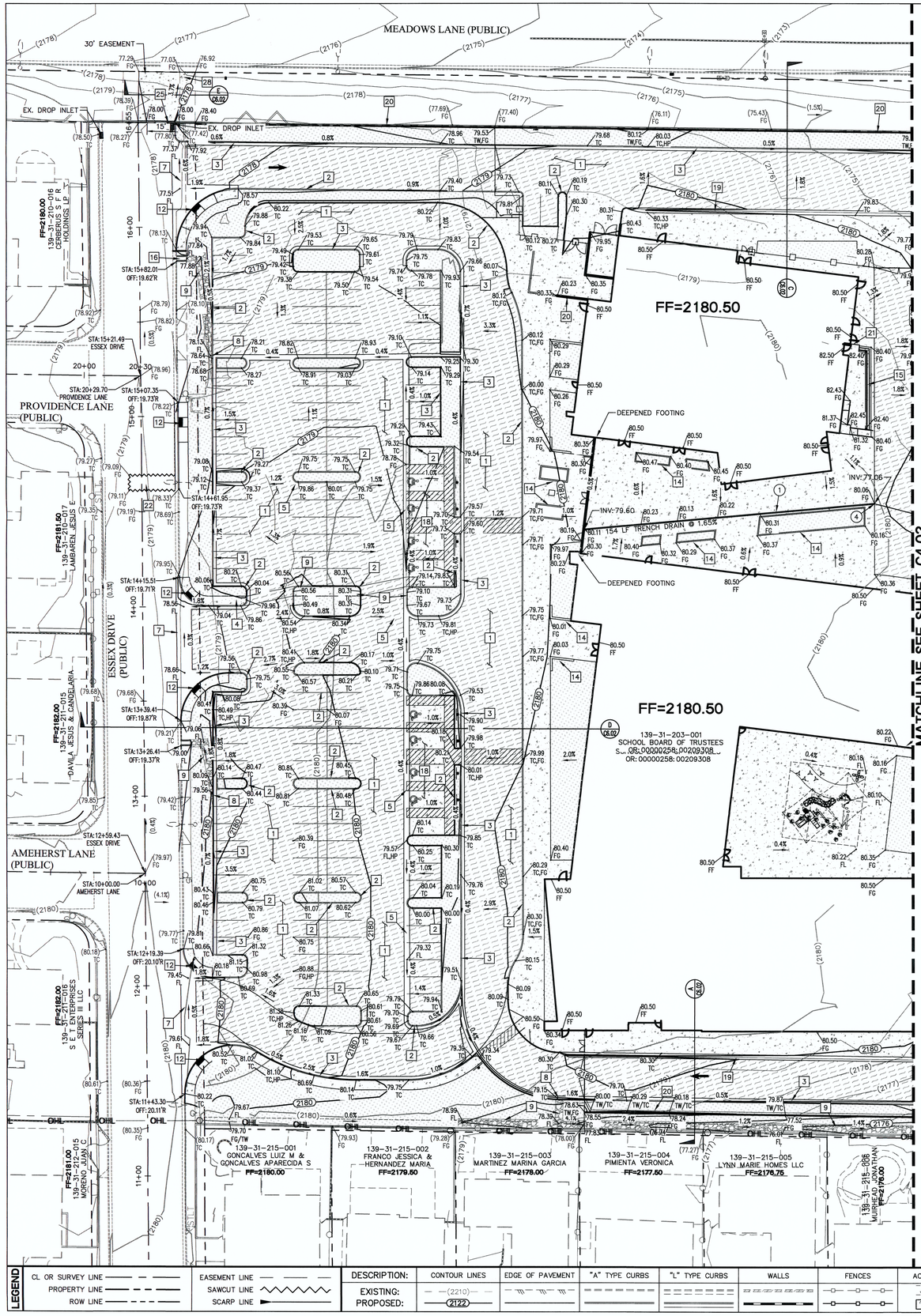
PROJECT: E.W. GRIFFITH ES REPLACEMENT

DRAWING TITLE: DETAIL SHEETS DETAIL SHEET 2 OF 2

FACILITY: 412

SHEET NO: C6.02
SHEET 14 OF 16

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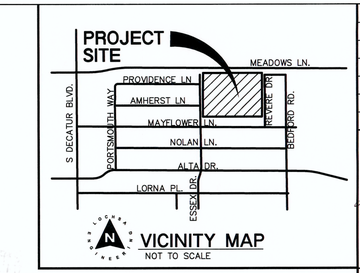
ENGINEERING LOCHSA

GRAPHIC SCALE

30 0 15 30 60

(IN FEET)

1 Inch = 30 ft.



VICINITY MAP

NOT TO SCALE

CONSTRUCTION NOTES:

– ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH "CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS (C.C.A.U.S.D.)" LATEST EDITION AND/OR REGULATING ENTITY HAVING JURISDICTION.

– NOT ALL NOTES USED ON THIS SHEET –

1. CONSTRUCT AC PAVEMENT PER DETAIL 2 ON C6.01.
2. CONSTRUCT "A" TYPE CURB PER DETAIL 1 ON C6.01.
3. CONSTRUCT "L" TYPE CURB PER CCAUSD No. 216.
4. CONSTRUCT ONSITE RAMP PER DETAIL 12 ON C6.01.
5. CONSTRUCT 3' VALLEY GUTTER PER DETAIL 6 ON C6.01.
6. SAWCUT AND MATCH EXISTING.
7. CONSTRUCT COMMERCIAL DRIVEWAY PER CCAUSD 225 WITH CONC. CROSS GUTTER PER CCAUSD No. 228.
8. CONSTRUCT 2' CURB OPENING PER DETAIL 15 ON C6.01.
9. INSTALL D50 = 3" RIP RAP. THICKNESS (T) = 6" PER DETAIL 13 ON C6.01.
10. LAY GUTTER FLAT PER DETAIL 14 ON SHEET C6.01.
11. ON–SITE CONCRETE PER DETAIL 7 ON SHEET C6.01. INSTALL CASE I HANDICAP RAMP PER CCAUSD NO. 235. A=8', B=8'
12. ON–SITE RAMP PER DETAIL 9 ON SHEET C6.01.
13. INSTALL PLANTER AND SEAT WALLS PER DETAIL ON C7.02. SEE ARCHITECTURAL PLANS FOR LOCATIONS.
14. CONSTRUCT STAIR ON GRADE PER DETAIL 3 ON C7.02.
15. CONSTRUCT SIDEWALK DRAIN PER CCAUSD. No. 236.
16. INSTALL 2' 'U' CHANNEL PER DETAIL 10 ON C6.01 ON–SITE CONCRETE PER DETAIL 7 ON SHEET C6.01. (COLOR BLACK)
17. CONSTRUCT 30" ROLL CURB PER CCAUSD NO. 217.2.S1.
18. INSTALL RETAINING WALL PER DETAILS ON C7.02
19. INSTALL TURNED DOWN SIDEWALK EDGE PER DETAIL 11 ON C6.01. TRENCH, BACKFILL, AND AC RESTORATION CCAUSD Nos. 503, 500.3, 500.4, AND 500.5.
20. INSTALL MOW–CURB PER DETAIL 18 ON C6.01.
21. CONSTRUCT 2' VALLEY GUTTER PER DETAIL 5 ON C6.01. REMOVE AND REPLACE WALL AS NECESSARY TO PROVIDE 2' TALL X 15' WIDE WALL OPENING PER STRUCTURAL DETAILS. BOTTOM OF OPENING TO BEGIN AT ELEV. 78.00
22. INSTALL MOW–CURB PER DETAIL 19 ON C6.01.
23. INSTALL D50 = 8" RIP RAP. THICKNESS (T) = 16"
24. CONSTRUCT CONCRETE SECTION PER CCAUSD. NO. 234.

STORM DRAIN CONSTRUCTION NOTES:

– NOT ALL NOTES USED ON THIS SHEET –

1. INSTALL CAST IN PLACE TRENCH DRAIN PER DETAIL 16 ON C6.01.
2. INSTALL STORM DRAIN CLEAN OUT.
3. DAYLIGHT STORM DRAIN THROUGH WALL.
4. CONNECT STORM DRAIN TO TRENCH PER DETAIL ON 16 ON C6.01.

GRADING NOTES:

1. SLOPES 4:1 OR STEEPER AND FINE–GRAINED MATERIALS THAT HAVE BEEN DISTURBED (SANDY AND SILTY MATERIALS) SHOULD BE PROTECTED WITH BURLAP OR OTHER EROSION CONTROL FABRIC/MATERIAL UNLESS OTHERWISE SPECIFIED BY LANDSCAPE DRAWINGS AND SPECIFICATIONS OR THE SOILS REPORT.
2. CONTRACTOR SHALL DETERMINE HIS OWN FOOTING OR BASEMENT EXCAVATION QUANTITIES, EVEN THOUGH SHOWN ON ROUGH GRADING PLANS. ADDITIONALLY, STRUCTURE BACKFILL COSTS SHOULD BE INCLUDED IN THE COST OF THE STRUCTURE, UNLESS OTHERWISE SPECIFIED IN THE CONTRACT DOCUMENTS.
3. CONTRACTOR SHALL NOTIFY LOCHSA ENGINEERING WITHIN 24 HOURS OF OMISSIONS AND ERRORS DISCOVERED ON PLANS. LOCHSA ENGINEERING WILL NOT BE RESPONSIBLE FOR ANY "CORRECTIVE" WORK DONE BY OTHERS.
4. CONTRACTOR TO ENSURE POSITIVE DRAINAGE. NO PONDING ALLOWED. CONTRACTOR TO FOLLOW RECOMMENDATIONS AS OUTLINED IN THE PROJECT GEOTECHNICAL REPORT, INCLUDING BUT NOT LIMITED TO EXCAVATION, GRADING AND COMPACTION. REFER TO THE REPORT PREPARED BY NINYO & MOORE, PROJECT No. 304289001.

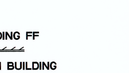
BASIS OF BEARINGS:

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS AND LAS VEGAS HIGH ELEVATION ZONES, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

ZONE: LAS VEGAS ELEVATION ZONE
DATUM (REFERENCE FRAME):
NAD 1983(2011) EPOCH 2010.0
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
'NORTHING AT GRID ORIGIN: 200,000.00 M (656,166.6667 FEET US)
EASTING AT CENTRAL MERIDIAN: 100,000.00 M (328,083.3333 FEET US)
SCALE FACTOR ON CENTRAL MERIDIAN; 1.0001 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.
2. GRID BEARING SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARING DUE TO MERIDIAN CONVERGENCE.



TYPICAL GRADING AWAY FROM BUILDING

CUT	FILL
1211 CY	23062 CY

NOTE: CUT/FILL QUANTITIES ARE TO FINISHED GRADE & DO NOT INCLUDE MATERIAL THICKNESS'S, FOOTINGS, ETC.

EXISTING UTILITY NOTE:

CONTRACTOR TO ADJUST ALL EXISTING UTILITIES TO MATCH PROPOSED FINISH GRADE ELEVATIONS.

FLOOD ZONE NOTE:

THE PROJECT SITE IS COVERED BY THE FLOOD INSURANCE RATE MAP (FIRM) FOR THE CLARK COUNTY AND INCORPORATED AREAS, NEVADA, COMMUNITY PANEL NUMBER: 32003C2165D, EFFECTIVE DATE: NOVEMBER 16, 2011. THE PROJECT SITE IS WITHIN ZONE 'X' (UNSHADED), DESCRIBED BY FEMA AS: "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN."

GRADING PLAN CERTIFICATION

NAME: GUY M. MORRIS PE # 14526 DATE

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

A.P.N.:

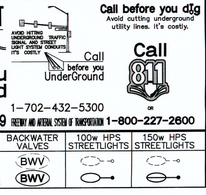
139–31–203–001

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK NO. 2LV0131NW6
BEING A RIVET AND PLATE TOP OF N. SIDE OF MEADOWS LANE 1/4 E. OF DECATUR BLVD.
ELEVATION: 2,180.68 FEET / 664.67362 METERS
NAVD '88

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.



REVISIONS:

REV.	DESCRIPTION:	DATE:

SEAL: GUY M. MORRIS Exp: 12/31/19 CIVIL No. 14526 PROFESSIONAL ENGINEER STATE OF NEVADA 9.26.18

DATE: 09–26–18
DRAWN BY: NMG
SUBMITTAL: CONFORMED SET
A/E PROJECT NO. 171208

A/E:

Gensler
3883 Howard Hughes Pkwy
Suite 650
Las Vegas NV 89169
Tel: 702.893.2800
Fax: 702.893.2805

CONSULTANT:

Lochsa engineering
6345 South Jones Blvd.
Las Vegas, NV 89118
Phone (702) 385-6312
Fax (702) 304-0217
www.lochsa.com

CONSTRUCTION MGMT:	DATE:
PROJECT MANAGER:	
COORDINATOR:	
BUILDING DEPARTMENT:	
CODE COMPLIANCE:	
AHERA REVIEW:	

ASBESTOS WORK IS:
REQUIRED ☐ NOT REQUIRED ☐

JOB# 0001621

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702–799–8710

PROJECT: E.W. GRIFFITH ES REPLACEMENT

DRAWING TITLE: GRADING PLANS SHEET 1 OF 2

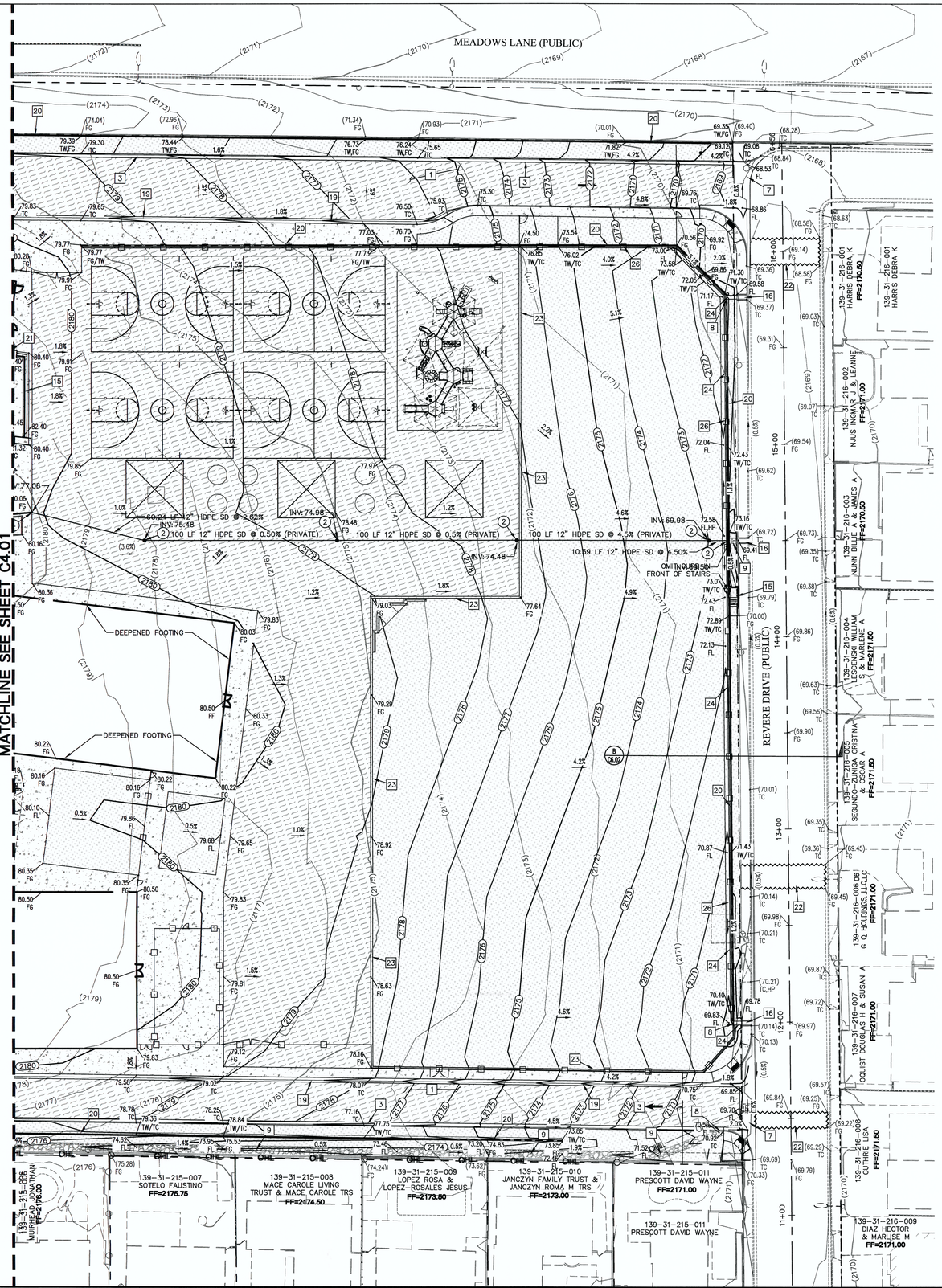
FACILITY: 412

SHEET NO: C4.01
SHEET 8 OF 16

LEGEND

		DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION
CL OR SURVEY LINE	EASEMENT LINE	EXISTING:	(2210)								(12.34) BC		S
PROPERTY LINE	SAWCUT LINE	PROPOSED:	2122								12.34 BC		S
ROW LINE	SCARP LINE												

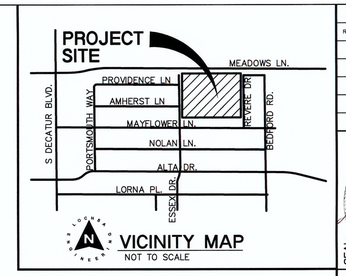
MANHOLE DESCRIPTIONS	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS
(S) = SANITARY SEWER						BWV		
(D) = STORM DRAIN						BWV		
(E) = ELECTRICAL								
(T) = TELEPHONE								



GRAPHIC SCALE

30 0 15 30 60

(IN FEET)
1 inch = 30 ft.



VICINITY MAP

NOT TO SCALE

CONSTRUCTION NOTES:

– ALL CONSTRUCTION TO BE DONE IN ACCORDANCE WITH "CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS (C.C.A.U.S.D.)" LATEST EDITION AND/OR REGULATING ENTITY HAVING JURISDICTION.
– NOT ALL NOTES USED ON THIS SHEET –

1. CONSTRUCT AC PAVEMENT PER DETAIL 2 ON C6.01.
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3. CONSTRUCT "L" TYPE CURB PER CCAUSD No. 216.
4. CONSTRUCT ONSITE RAMP PER DETAIL 12 ON C6.01.
5. CONSTRUCT 3' VALLEY GUTTER PER DETAIL 6 ON C6.01.
6. SAWCUT AND MATCH EXISTING.
7. CONSTRUCT COMMERCIAL DRIVEWAY PER CCAUSD 225 WITH CONC. CROSS GUTTER PER CCAUSD No. 228.
8. CONSTRUCT 2' CURB OPENING PER DETAIL 15 ON C6.01.
9. INSTALL D50 = 3" RIP RAP. THICKNESS (T) = 6" PER DETAIL 13 ON C6.01.
10. LAY GUTTER FLAT PER DETAIL 14 ON SHEET C6.01.
11. ON–SITE CONCRETE PER DETAIL 7 ON SHEET C6.01. INSTALL CASE I HANDICAP RAMP PER CCAUSD NO. 235. A=8', B=8'
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13. INSTALL PLANTER AND SEAT WALLS PER DETAIL ON C7.02. SEE ARCHITECTURAL PLANS FOR LOCATIONS.
14. CONSTRUCT STAIR ON GRADE PER DETAIL 3 ON C7.02.
15. CONSTRUCT SIDEWALK DRAIN PER CCAUSD. No. 236.
16. INSTALL 2' 'U' CHANNEL PER DETAIL 10 ON C6.01. ON–SITE CONCRETE PER DETAIL 7 ON SHEET C6.01. (COLOR BLACK)
17. CONSTRUCT 30" ROLL CURB PER CCAUSD NO. 217.2.S1.
18. INSTALL RETAINING WALL PER DETAILS ON C7.02
19. INSTALL TURNED DOWN SIDEWALK EDGE PER DETAIL 11 ON C6.01.
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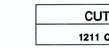
STORM DRAIN CONSTRUCTION NOTES:

– NOT ALL NOTES USED ON THIS SHEET –

1. INSTALL CAST IN PLACE TRENCH DRAIN PER DETAIL 16 ON C6.01.
2. INSTALL STORM DRAIN CLEAN OUT.
3. DAYLIGHT STORM DRAIN THROUGH WALL.
4. CONNECT STORM DRAIN TO TRENCH PER DETAIL ON 16 ON C6.01.

GRADING NOTES:

1. SLOPES 4:1 OR STEEPER AND FINE–GRAINED MATERIALS THAT HAVE BEEN DISTURBED (SANDY AND SILTY MATERIALS) SHOULD BE PROTECTED WITH BURLAP OR OTHER EROSION CONTROL FABRIC/MATERIAL, UNLESS OTHERWISE SPECIFIED BY LANDSCAPE DRAWINGS AND SPECIFICATIONS OR THE SOILS REPORT.
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TYPICAL GRADING AWAY FROM BUILDING

CUT	FILL
1211 CY	23062 CY

NOTE: CUT/FILL QUANTITIES ARE TO FINISHED GRADE & DO NOT INCLUDE MATERIAL THICKNESS'S, FOOTINGS, ETC.

EXISTING UTILITY NOTE:

CONTRACTOR TO ADJUST ALL EXISTING UTILITIES TO MATCH PROPOSED FINISH GRADE ELEVATIONS.

FLOOD ZONE NOTE:

THE PROJECT SITE IS COVERED BY THE FLOOD INSURANCE RATE MAP (FIRM) FOR THE CLARK COUNTY AND INCORPORATED AREAS, NEVADA, COMMUNITY PANEL NUMBER: 32003C2165D, EFFECTIVE DATE: NOVEMBER 16, 2011. THE PROJECT SITE IS WITHIN ZONE "X" (UNSHADED), DESCRIBED BY FEMA AS: "AREAS DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOODPLAIN."

GRADING PLAN CERTIFICATION

NAME: GUY M. MORRIS PE # 14526 DATE

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

A.P.N.:

139–31–203–001

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK NO. 2LV0131NW6
BEING A RIVET AND PLATE TOP OF N. SIDE OF MEADOWS LANE 1/4 E. OF DECATUR BLVD.
ELEVATION: 2,180.68 FEET / 664.67362 METERS
NAVD '88

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.



BASIS OF BEARINGS:

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS AND LAS VEGAS HIGH ELEVATION ZONES, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

ZONE: LAS VEGAS ELEVATION ZONE
DATUM (REFERENCE FRAME):
NAD 1983(2011) EPOCH 2010.0
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
'NORTHING AT GRID ORIGIN: 200,000.00 M (656,166.6667 FEET US)
EASTING AT CENTRAL MERIDIAN: 100,000.00 M (328,083.3333 FEET US)
SCALE FACTOR ON CENTRAL MERIDIAN; 1.0001 (EXACT)

NOTES:
1. ALL DISTANCES AND BEARINGS SHOWN HEREON ARE PROJECTED (GRID) VALUES BASED ON THE PRECEDING PROJECTION DEFINITION. THE PROJECTION WAS DEFINED SUCH THAT PROJECTED (GRID) DISTANCES ARE EQUIVALENT TO "GROUND" DISTANCES IN THE PROJECT AREA.
2. GRID BEARING SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARING DUE TO MERIDIAN CONVERGENCE.

LEGEND																										
CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								(12.34) BC		(S)	(S) = SANITARY SEWER						BWV		
ROW LINE	SCARP LINE	PROPOSED:	2122								12.34 BC			(D) = STORM DRAIN (E) = ELECTRICAL (T) = TELEPHONE						BWV		

REVISIONS:

REV.	DESCRIPTION:	DATE:

SEAL: PROFESSIONAL ENGINEER – STATE OF NEVADA – GUY M. MORRIS – Exps 12/31/19 – CIVIL – No. 14526

DATE: 09–26–18
DRAWN BY: NMG
SUBMITTAL: CONFORMED SET
A/E PROJECT NO.: 171208

A/E: Gensler
3883 Howard Hughes Pkwy
Suite 630
Las Vegas NV 89169
Tel: 702.893.2800
Fax: 702.893.2805

CONSULTANT: Lochsa engineering
6345 South Jones Blvd.
Suite 100
Las Vegas, NV 89118
Phone (702) 365-6312
Fax (702) 365-6317
www.lochsa.com

CONSTRUCTION MGMT:	DATE:
PROJECT MANAGER:	
COORDINATOR:	
BUILDING DEPARTMENT:	
CODE COMPLIANCE:	
AHERA REVIEW:	

ASBESTOS WORK IS: REQUIRED ☐ NOT REQUIRED ☐

JOB# 0001621

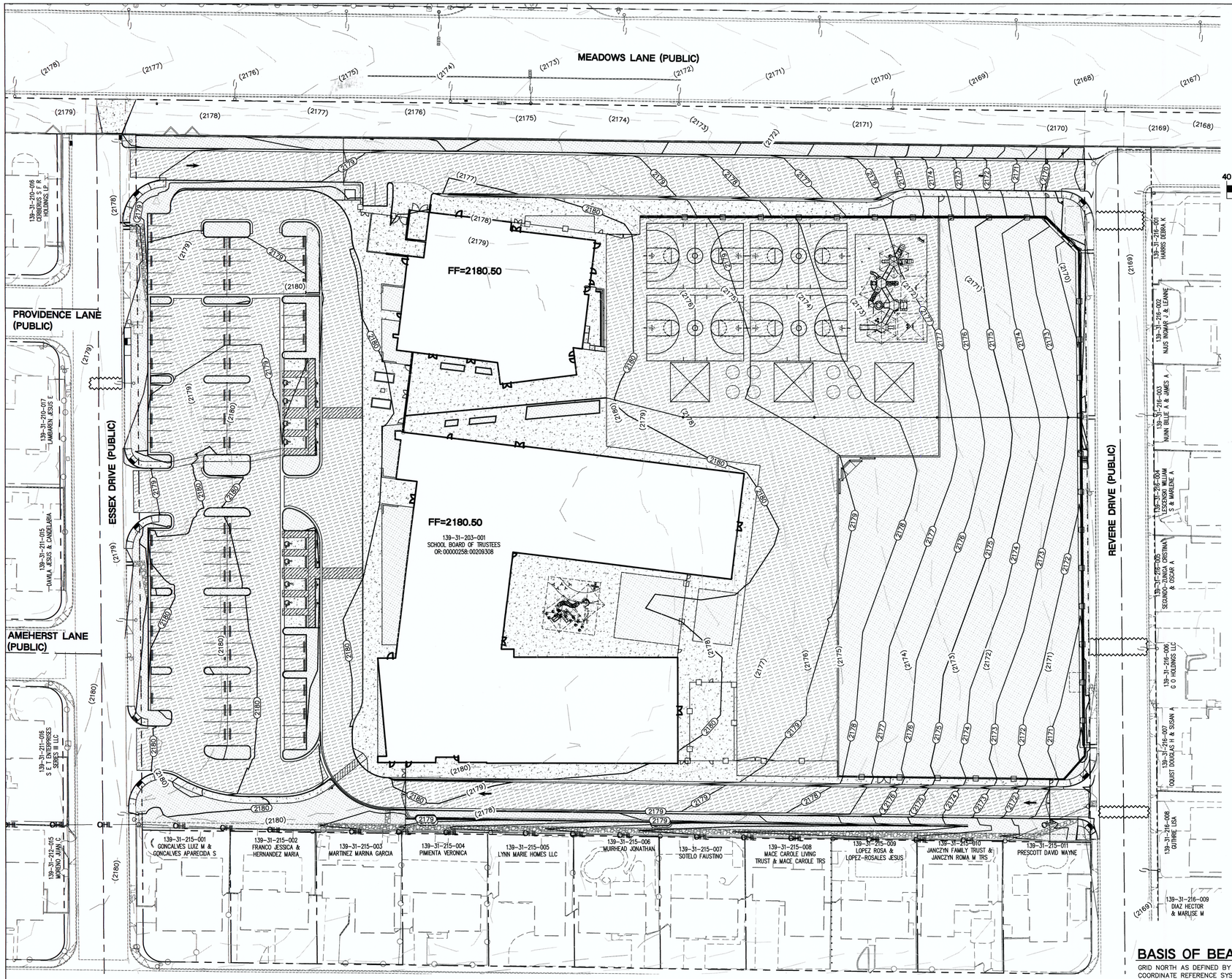
CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702-799-8710

PROJECT: E.W. GRIFFITH ES REPLACEMENT

DRAWING TITLE: GRADING PLANS SHEET 2 OF 2

FACILITY: 412

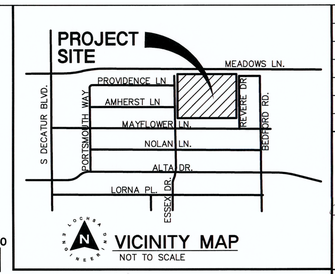
SHEET NO: C4.02
SHEET 9 OF 16



GRAPHIC SCALE

40 0 20 40 80

(IN FEET)
1 inch = 40 ft.



VICINITY MAP
NOT TO SCALE

LAS VEGAS VALLEY CONSTRUCTION SITE BEST MANAGEMENT PRACTICES GUIDANCE MANUAL SECTION 3.5.1 STANDARD NOTES 1-5

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 ACCUMULATED IN, THE PUBLIC RIGHT-OF-WAY OF THE CITY OF LAS VEGAS AS A RESULT OF CONSTRUCTION ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR CONSTRUCTION PROJECT. SUCH MATERIAL 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 BMP GUIDANCE 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 THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR10000, 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 ARE EXPOSED TO PRECIPITATION, VEHICLE ENTRANCE AND EXIT LOCATIONS, AND ALL BMPS WEEKLY, AND WITHIN 24 HOURS AFTER ANY RAIN EVENT OR 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 THE NEVADA STORMWATER GENERAL PERMIT FOR CONSTRUCTION ACTIVITY NVR100000, SECTION III.A.12.
5. ACCUMULATED SEDIMENT IN BMP'S 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.

BASIS OF BEARINGS:

GRID NORTH AS DEFINED BY THE CENTRAL MERIDIAN OF THE NEVADA COORDINATE REFERENCE SYSTEM (NCRS), LAS VEGAS AND LAS VEGAS HIGH ELEVATION ZONES, NORTH AMERICAN DATUM OF 1983; SAID MERIDIAN BEING COINCIDENT WITH 114°58' WEST OF THE GREENWICH MERIDIAN.

ZONE: LAS VEGAS ELEVATION ZONE
DATUM (REFERENCE FRAME):
NAD 1983(2011) EPOCH 2010.0
SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

PROJECTION: TRANSVERSE MERCATOR
STANDARD PARALLEL (AND LATITUDE OF GRID ORIGIN): 36°15'00"N
LONGITUDE OF CENTRAL MERIDIAN: 114°58'00"W
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SCALE FACTOR ON CENTRAL MERIDIAN; 1.0001 (EXACT)

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2. GRID BEARING SHOWN HEREON (OR IMPLIED BY GRID COORDINATES) DO NOT EQUAL GEODETIC BEARING DUE TO MERIDIAN CONVERGENCE.

A.P.N.:

139-31-203-001

BENCHMARK:

CITY OF LAS VEGAS BENCHMARK NO. 2LV0131NW6
BEING A RIVET AND PLATE TOP OF N. SIDE OF MEADOWS LANE 1/4 E. OF DECATUR BLVD.
ELEVATION: 2,180.68 FEET / 664.67362 METERS
NAVD '88

NOTE:

LOCHSA ENGINEERING ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS PLAN ARE FROM THE BEST AVAILABLE INFORMATION. IT IS THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES, INCLUDING BUT NOT LIMITED TO, THE WATER, FIRE, SANITARY SEWER, STORM SEWER, TELEPHONE, POWER, GAS, AND IRRIGATION LINES PRIOR TO THE COMMENCEMENT OF CONSTRUCTION. IF CONFLICT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE PROJECT ARCHITECT, OWNER'S REPRESENTATIVE AND THE PROJECT ENGINEER IMMEDIATELY.



LEGEND

CL OR SURVEY LINE	EASEMENT LINE	DESCRIPTION:	CONTOUR LINES	EDGE OF PAVEMENT	"A" TYPE CURBS	"L" TYPE CURBS	WALLS	FENCES	AC PAVEMENT	CONCRETE	SPOT ELEVATIONS	SIGNS	MANHOLE W/ DESCRIPTION	MANHOLE DESCRIPTIONS	FIRE HYDRANTS	GATE VALVES	REDUCERS	CLEAN OUTS	UTILITY BOX OR VAULT	BACKWATER VALVES	100w HPS STREETLIGHTS	150w HPS STREETLIGHTS
PROPERTY LINE	SAWCUT LINE	EXISTING:	(2210)								(12.34) BC		Ⓢ	Ⓢ = SANITARY SEWER						BWV		
ROW LINE	SCARP LINE	PROPOSED:	2122								12.34 BC		Ⓢ	Ⓓ = STORM DRAIN Ⓔ = ELECTRICAL Ⓣ = TELEPHONE						BWV		

REVISIONS:

REV.	DESCRIPTION:	DATE:

SEAL: PROFESSIONAL ENGINEER - STATE OF NEVADA - GUY M. MORRIS - EXP. 12-31-19 - CIVIL - No. 14528 - 09-26-18

DATE: 09-26-18 | DRAWN BY: NMG | SUBMITTAL: CONFORMED SET | A/E PROJECT NO. 171208

A/E: Gensler
3883 Howard Hughes Pkwy
Suite 630
Las Vegas NV 89169
Tel: 702.893.2800
Fax: 702.893.2805

CONSULTANT: Lochsa engineering
6345 South Jones Blvd.
Suite 100
Las Vegas, NV 89118
Phone (702) 365-6312
(702) 365-6317
www.lochsa.com

CONSTRUCTION MGMT:	DATE:
PROJECT MANAGER:	
COORDINATOR:	
BUILDING DEPARTMENT:	
CODE COMPLIANCE:	
AHERA REVIEW:	

ASBESTOS WORK IS: REQUIRED ☐ NOT REQUIRED ☐

JOB# 0001621

CLARK COUNTY SCHOOL DISTRICT
CONSTRUCTION MANAGEMENT DEPARTMENT 1180 MILITARY TRIBUTE PL HENDERSON NV 89074 PHONE: 702-799-8710

PROJECT: E.W. GRIFFITH ES REPLACEMENT
DRAWING TITLE: GRADING PLANS OVERALL
FACILITY: 412

SHEET NO: C4.00
SHEET 7 OF 16

APPENDIX D

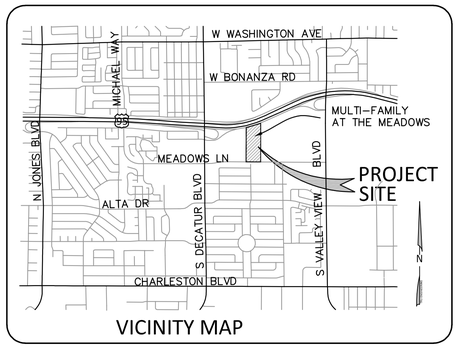
(Plans and Details)

- General Notes Sheet
- Grading Plans
- Detail Sheets

MULTI-FAMILY AT THE MEADOWS

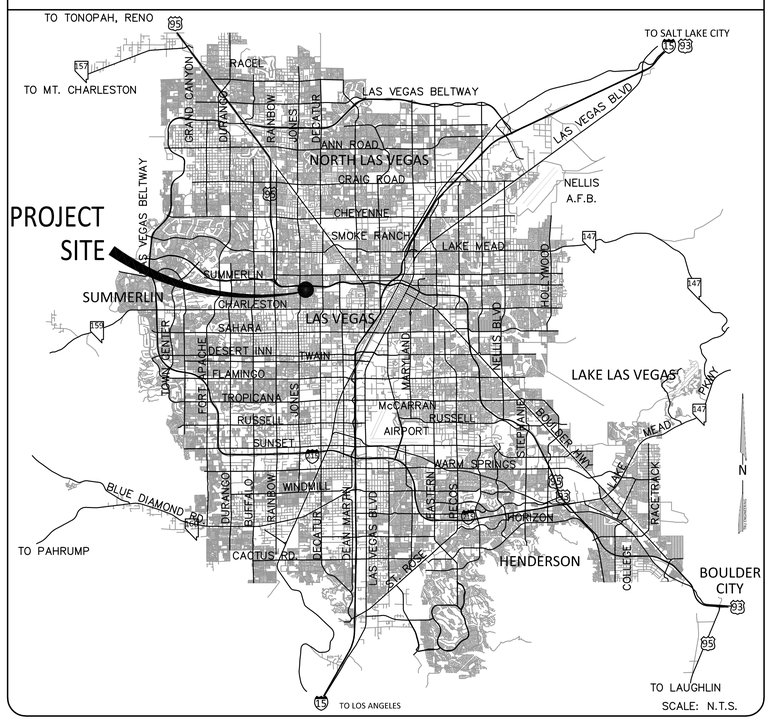
IMPROVEMENT PLANS

APN: 139-31-111-010



VICINITY MAP

LOCATION MAP



INDEX OF DRAWINGS

SHT.	NO.	SHEET TITLE
1	C1.01	COVER SHEET
2	C1.02	PROJECT DATA SHEET
3	C1.03	GENERAL NOTES SHEET
4	C3.01	HORIZONTAL CONTROL PLAN 1
5	C3.02	HORIZONTAL CONTROL PLAN 2
6	C3.03	LINE AND CURVE CURB TABLES
7	C4.01	GRADING PLAN 2
8	C4.02	GRADING PLAN 2
9	C5.01	ON-SITE SIGNAGE, STRIPING & FIRE LANE PLAN
10	C5.02	ON-SITE SIGNAGE, STRIPING & FIRE LANE PLAN
11	C6.01	UTILITY PLAN 1
12	C6.02	UTILITY PLAN 2
13	C6.03	UTILITY DETAILS
14	C8.01	DETAILS & SECTIONS 1
15	C8.02	DETAILS & SECTIONS 2

LEGAL DESCRIPTION

BEING PARCEL 1 LOT 2 AS SHOWN BY MAP THEREOF IN FILE 209, PAGE 24 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA, LYING WITHIN THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31 TOWNSHIP 20 SOUTH, RANGE 61 EAST, MOUNT DIABLO MERIDIAN, CITY OF LAS VEGAS, CLARK COUNTY, NV.

ENGINEER

TRU Engineering

9555 HILLWOOD DR.
LAS VEGAS, NV. 89134
OFFICE: (702) 545-0355
FAX: (702) 545-0987
pf@trudevco.com

OWNER/DEVELOPER

Meadows Owner, LLC

c/o SILVERSTEIN PROPERTIES, Inc.
7 WORLD TRADE CENTER
250 GREENWICH STREET, 38th Floor
NEW YORK, NY. 10007
OFFICE: (702) 545-0355
FAX: (702) 545-0987

APPROVALS

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-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 STANDARDS". THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN "DEVIATIONS FROM STANDARDS" IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA.

CITY ENGINEER DATE

LAS VEGAS FIRE & RESCUE DATE

DIRECTOR, BUILDING AND SAFETY DATE

THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. 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 STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

CENTRAL TELEPHONE CO., DBA CENTURYLINK DATE

NV ENERGY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. 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.

NV ENERGY DATE

SOUTHWEST GAS CORP. DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE: _____.

FOR ALL DRY UTILITY CROSSINGS:

- MAINTAIN MINIMUM 12" VERTICAL SEPERATION AT ALL PONTS OF CROSSING
- MAINTAIN MINIMUM 3' PARALLEL SEPERATION
- ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED MUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

DRAINAGE CERTIFICATION

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY DS-XXXX ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

PAUL F. FRITZ P.E. 16825 DATE



BASIS OF BEARINGS

NORTH 89°18'55" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., SHOWN AS NORTH 89°41'09" WEST IN FILE 124, PAGE 59 OF PARCEL MAPS, ON FILE AT THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK

CCBM#		ELEVATION	DESCRIPTION
1LV0131 NWW6	S E T	670.32 (M) 2199.22 (FT.)	CITY OF LAS VEGAS BENCHMARK 1LV0131NWW6 RIVET AND PLATE IN TOP OF CURB AT NORTHEAST CORNER OF DECATUR AND MEADOWS LANE ON SIGNAL POLE ISLAND.

BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88). PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUMS. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS IN CONJUNCTION WITH OLDER DRAWINGS.

No.	DESCRIPTION	DATE	INITIAL

DATE: 05-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 05-22-20
PLOT TIME: 15:46:36

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
TRUDevCo.com

X:\Projects\19-007\Civil\DWG\Production\19-007c1.01 COVR.dwg
Paul Fritz

MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

COVER SHEET

DRAWING
C1.01
1 OF 15 SHTS

107v00000

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE 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 WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

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

   COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE. COMPACTION SHALL COMPLY WITH THE REQUIREMENTS OF THE ENGINEER.
7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION 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 SOIL, 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, SUCH ITEM SHALL BE PROVIDED, AS DIRECTED BY THE CITY ENGINEER, AT NO EXPENSE TO THE CITY OF LAS VEGAS. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REVISED 4/15/10

STORMWATER RUNOFF MANAGEMENT

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 ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR 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 ARE 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.

LEGEND

- PROPOSED UTILITIES
- EXISTING UTILITIES
- FUTURE UTILITIES
- SECTION LINE
- EASEMENT LINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- CENTERLINE
- PROPOSED UTILITY (BY OTHERS)
- PROPOSED SEWER LINE W/MH
- FUTURE SEWER LINE W/MH
- 16" SS — EXISTING SEWER LINE W/MH
- 4" W — EXISTING WATER LINE & GATE VALVE
- 12" PVC WTR — PROPOSED WATER LINE & GATE VALVE
- FUT WTR — FUTURE WATER LINE & GATE VALVE
- 2" G — EXISTING GAS LINE
- 2-6" E — EXISTING UNDERGROUND ELECTRICAL
- CATV — EXISTING CABLE TV
- TEL — EXISTING TELEPHONE
- OHP — EXISTING OVERHEAD POWER
- PROPOSED STORM DRAIN W/MH
- 6"x6" SD — EXISTING STORM DRAIN W/MH
- 3"x5" SD — FUTURE STORM DRAIN W/MH
- SIDEWALK — EXISTING SIDEWALK AND RAMP
- SIDEWALK — FUTURE SIDEWALK AND RAMP
- SIDEWALK — PROPOSED CURB, GUTTER AND SIDEWALK
- ROUGHT IRON FENCE
- NEW ABANDONED PIPE
- EXISTING ABANDONMENT
- SAWCUT
- STEEL CASING
- PAVEMENT RESTORATION
- TO BE ABANDONED (PROFILE)
- EDGE OF PAVEMENT / OUTSIDE EDGE
- LIMITS OF CONSTRUCTION
- FILL LIMIT LINE
- WATERPROOFING
- PEDESTRIAN ACCESS EASEMENT

- 1 / CD1 — DRAWING NUMBER FOR DETAIL W/ REF. TO THE SHEET WHERE IT IS SHOWN
- BENCHMARK
- POTHOLE LOCATION
- EXISTING GATE VALVE
- FUTURE GATE VALVE
- PROPOSED WATER METER
- EXISTING TRAFFIC SIGNAL PULL BOX
- EXISTING TELEPHONE MANHOLE
- EXISTING POWER POLE
- FIRE HYDRANT
- EXISTING FIRE HYDRANT
- EXISTING UTILITY BOX
- EXISTING METER BOX
- EXISTING POLE
- 3005 — PROPOSED CONTOUR
- (3005) — EXISTING CONTOUR
- 60.50 TC — SPOT ELEVATION
- (60.50) TC — EXISTING SPOT ELEVATION
- 1.00% — ROAD SLOPE
- EXISTING STREET LIGHT (STLT)
- TOP SLOPE / TOE SLOPE — 3:1 SLOPE UNLESS NOTED OTHERWISE ON PLAN
- RETAINING WALL
- STORM DRAIN MANHOLE
- WATER STUB WITH BLOW-OFF
- FUTURE WATER STUB WITH BLOW-OFF
- SEWER STUB WITH CAP
- FUTURE SEWER STUB WITH CAP
- BUILDING SLAB STEP, FINISH FLOOR STEP
- LANDSCAPE ATRIUM DRAIN
- CATCH BASIN
- SEWER CLEANOUT

ABBREVIATIONS

A	AIR	FH	FIRE HYDRANT	PZ	PRESSURE ZONE
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	FL	FLOW LINE / FIRE LANE	R, RAD	RADIAL, RADIUS
		FLG	FLANGE	RET	RETAINING
		FO	FIBER OPTIC	RT	RIGHT
AC	ASPHALT CONCRETE, ACRE	FRP	FIBERGLASS REINFORCED PLASTIC	RCB	REINFORCED CONCRETE BOX
ACP	ASBESTOS CEMENT PIPE	FS	FINISH SURFACE	RCP	REINFORCED CONCRETE PIPE
ADD'L	ADDITIONAL	FT	FOOT/FEET	RD	ROAD, ROOF DRAIN
AGG	AGGREGATE BASE	FTG	FOOTING	RDWY	ROADWAY
AP	ANGLE POINT	FUT	FUTURE	REC	RECTANGULAR
APN	ASSESSOR'S PARCEL NUMBER	G	GAS	REF	REFERENCE
APT	APARTMENT	GA	GAGE, GUY ANCHOR	REINF	REINFORCED
APPROX	APPROXIMATELY	GARG	GARAGE	REQD	REQUIRED
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	GB	GRADE BREAK	RIM	TOP OF RIM ELEVATION
		GND	GROUND	RND	ROUND
AVE	AVENUE	GRD	GRADE, GROUND	ROW,R/W	RIGHT OF WAY
AVAR	AIR VALVE, AIR RELEASE ASSEMBLY	H, HGT	HEIGHT	RP	RADIUS POINT
		HDPE	HIGH DENSITY POLYETHYLENE	RPM	RAISED PAVEMENT MARKERS
AWWA	AMERICAN WATER WORKS ASSOCIATION	HDWL	HEADWALL	RR	FIRE RISER ROOM
		HERCP	HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE	RSGV	RESILIENT SEAT GATE VALVE
BC	BACK OF CURB			S	SEWER, SOUTH
BCR	BEGIN CURB RETURN	HGL	HYDRAULIC GRADE LINE	SCH	SCHEDULE
BLDG	BUILDING	HORIZ	HORIZONTAL	SD	STORM DRAIN
BLM	BUREAU OF LAND MANAGEMENT	HP	HIGH POINT, HIGH PRESSURE	SDCO	STORM DRAIN CLEANOUT
BLVD	BOULEVARD	HPS	HIGH PRESSURE SODIUM	SDMH	STORM DRAIN MANHOLE
BM	BENCHMARK	IBC	INTERNATIONAL BUILDING CODE	SECT	SECTION
BO	BLOW-OFF	INV	INVERT	SF	SQUARE FOOT/FEET
BVCE	BEGIN VERTICAL CURVE ELEVATION	INT	INTERIM	SHLDR	SHOULDER
BVCS	BEGIN VERTICAL CURVE STATION	JT	JOINT	SHT	SHEET
BW	BACK OF SIDEWALK	L	LENGTH	SL	STREET LIGHT
CL,℄	CENTERLINE	L, LT	LEFT	S.O.G.	SLAB ON GRADE
C&G	CURB AND GUTTER	LAT	LATERAL	SP	SERVICE POINT
CATV	UNDERGROUND CABLE TV	LF	LINEAR FEET	SQ	SQUARE
CCBM	CLARK COUNTY BENCH MARK	LIP	LIP OF GUTTER	SR	SEWER RECLAIM MAIN
CCPW	CLARK COUNTY PUBLIC WORKS	LN	LANE	SS	SANITARY SEWER
CCRFCD	CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT	LP	LIGHT POLE	SSMH	SANITARY SEWER MANHOLE
		LSCP LS	LANDSCAPE	STA	STATION
CCTV	CLOSED-CIRCUIT TELEVISION	LVVWD	LAS VEGAS VALLEY WATER DISTRICT	ST	STREET
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	MAX	MAXIMUM	STD	STANDARD
		MATCH	MATCH EXISTING	STL	STEEL
CFS	CUBIC FEET PER SECOND	MH	MANHOLE	STLT	STREETLIGHT
CIP	CAPITAL IMPROVEMENTS PROJECT, CORRUGATED IRON PIPE	MIN	MINIMUM	STRUCT	STRUCTURE
		MLCP	MORTAR LINED AND COATED PIPE	SVZ	SIGHT VISIBILITY ZONE
CIPM	CURED-IN-PLACE MANHOLE	MOD	MODIFY/MODIFIED	SW	SIDEWALK
CIPP	CURED-IN-PLACE PIPE	MON	MONUMENT	SWG	SOUTHWEST GAS
CIR	CIRCLE	MPH	MILES PER HOUR	T	TELEPHONE OR TOP
CLR	CLEAR OR CLEARANCE	MSM	MINOR SUBDIVISION MAP	TAN	TANGENT
CLSM	CONTROLLED LOW STRENGTH MATERIAL	N	NORTH	TB	TOP OF BERM
		NAP	NOT A PART	TC	TOP OF CURB
CLV	CITY OF LAS VEGAS	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION	TCD	TRAFFIC CONTROL DEVICE
CMP	CORRUGATED METAL PIPE			TCE	TEMPORARY CONSTRUCTION ESMT
CMU	CONCRETE MASONRY UNIT	NO	NUMBER	TEL,TELE	TELEPHONE
CNLV	CITY OF NORTH LAS VEGAS	NOSHA	STATE OF NEVADA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION	TEMP	TEMPORARY
CO	CLEANOUT			TF	TOP OF FOOTING
CONC	CONCRETE			TG	TOP OF GRATE
COND	CONDUIT	NPC	NEVADA POWER COMPANY	TMH	TOP OF MANHOLE
CONST	CONSTRUCT OR CONSTRUCTION	NTS	NOT TO SCALE	TOP	TOP OF PIPE
COORD	COORDINATE	OC	ON CENTER	TP	TELEPHONE POLE
COR	CORNER	OHC	OVERHEAD COX COMMUNICATION	TRANS	TRANSITION
CPEP	CORRUGATED POLYETHELYNE PIPE	OHP	OVERHEAD POWER LINE	TRW	TOP OF RETAINING WALL
CPR	COPPER WATERLINE	P	POWER LINE	TS	TRAFFIC SIGNAL
CT	COURT	PB	PULL BOX	TSW	TOP OF SIDEWALK
CY	CUBIC YARD(S)	PBS	PLANTMIX BITUMINOUS SURFACE	TW	TOP OF WALL
Δ	DELTA	PC	POINT OF CURVE, PRESSURE	TYP.(TYP)	TYPICAL
DBL	DOUBLE		CLASS	UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS (LATEST EDITION)
DCS	DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEM (LATEST EDITION)	PCC	POINT OF COMPOUND CURVE		
		PE	PROJECT ENGINEER, POLYETHYLENE OR PERMANENT EASEMENT		
		PED	PEDESTRIAN	UG	UNDERGROUND
DE	DRAINAGE EASEMENT	PERF	PERFORATED	UNO	UNLESS NOTED OTHERWISE
DEFL	DEFLECTION	PGL	PROFILE GRADE LINE	ULT	ULTIMATE
DIA, ø	DIAMETER	PH	POTHOLE	USDCCA	UNIFORM STD. DRAWINGS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA (LATEST EDITION)
DIP	DUCTILE IRON PIPE	PI	POINT OF INTERSECTION		
DIST	DISTANCE	PIP	PROTECT IN PLACE		
DOM	DOMESTIC	PIV	POST INDICATOR VALVE		
DR	DRIVE	℄	PROPERTY LINE		
DS	DOWNSPOUT	PLCP	POLYURETHANE LINED AND COATED STEEL PIPE	UT	UNDERGROUND TELEPHONE
DTL	DETAIL			UTIL	UTILITY
DW	DRIVEWAY	PMF	PAVEMENT MARKING FILM	VAR	VARIABLE/VARIES
DWG	DRAWING	PO	PUSH-ON	VC	VERTICAL CURVE
E	EAST	POB	POINT OF BEGINNING	VCP	VITRIFIED CLAY PIPE
ECR	END CURB RETURN	POC	POINT ON CURVE	VERT	VERTICAL
ELE,ELEC	ELECTRICAL	P.O.C.	POINT OF CONNECTION	VG	VALLEY GUTTER
ELEV	ELEVATION	POT	POINT ON TANGENT	VOL	VOLUME
EP, EOP	EDGE OF PAVEMENT	PP	POWER POLE	W	WATER, WEST
ESMT	EASEMENT	PROP	PROPOSED	W/	WITH
EVC	END VERTICAL CURVE	PRC	POINT OF REVERSE CURVE	WS	WATER SUPPLY
EXIST,EX	EXISTING	PRVC	POINT OF REVERSE VERTICAL CURVE	WT	WEIGHT
EXP	EXPANSION JOINT			WTR	WATER
FC	FACE OF CURB	PSI	POUNDS PER SQUARE INCH	XING	CROSSING
FF FFE	FINISH FLOOR / FINISH FLOOR ELEVATION	PT	POINT OF TANGENCY	YD	YARD, YARD DRAIN
		P.U.E.	PUBLIC UTILITY EASEMENT	Z	PRESSURE ZONE
FG	FINISH GRADE	PVC	POLYVINYL CHLORIDE		
		PVI	POINT OF VERTICAL INTERSECTION		
		PVMT	PAVEMENT		

QUANTITIES

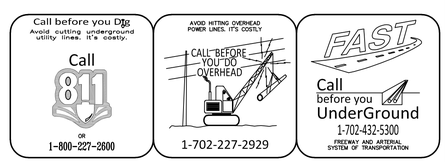
SIZE	DESCRIPTION	PUBLIC	PRIVATE	QTY	UNIT
10"	PVC WATER	0	2,305	2,305	LF
6"	PVC WATER	0	178	178	LF
10"	GATE VALVE	0	2	2	EA
6"	GATE VALVE	0	6	6	EA
10"	10" TAPPING SLEEVE & VALVE	2	0	2	EA
6"	FIRE HYDRANT ASSEMBLY	0	6	6	EA
18"	RCP SD	0	52	52	LF
15'	DROP INLET	0	2	2	EA
	CONC. FLUME	0	2	2	EA
3'	CONC VALLEY GUTTER	0	1,678	1,678	LF
	COMMERCIAL DRIVEWAY	0	762	762	SF
6"	PVC (SDR-35) SANITARY SEWER	0	61	61	LF
8"	PVC (SDR-35) SANITARY SEWER	0	1,654	1,654	LF
48"	SANITARY SEWER MANHOLE	0	8	8	EA
3.5"	AC PAVEMENT	0	10,491	10,491	SY
2.5"	AC PAVEMENT	0	28,824	28,824	SY
	TYPE II AGG BASE	0	141,547	141,547	CY
	"L" TYPE CURB	0	415	415	LF
	"A" TYPE CURB	0	8,124	8,124	LF
	ADA RAMP	0	4	4	EA
4"	CONC. SIDEWALK	0	509	509	SF
	RETAINING WALL	0	82	82	SF

EARTHWORK QUANTITIES

VOLUME SUMMARY

AREA	CUT	FILL	NET
415,773 SF	6,726 CY	21,512 CY	14,786 CY

DOES NOT INCLUDE EXCAVATION FOR FOOTINGS OR UTILITY TRENCHING



BASIS OF BEARINGS

NORTH 89°18'55" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., SHOWN AS NORTH 89°41'09" WEST IN FILE 124, PAGE 59 OF PARCEL MAPS, ON FILE AT THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK

CCBM#		ELEVATION	DESCRIPTION
1LV0131 NWW6	S.E.T.	670.32 (M) 2199.22 (FT.)	CITY OF LAS VEGAS BENCHMARK 1LV0131NWW6 RIVET AND PLATE IN TOP OF CURB AT NORTHEAST CORNER OF DECATUR AND MEADOWS LANE ON SIGNAL POLE ISLAND.

BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88). PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUMS. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS IN CONJUNCTION WITH OLDER DRAWINGS.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE: _____.

No.	DATE	DESCRIPTION	DATE	INITIAL

PROFESSIONAL ENGINEER — STATE OF NEVADA — PAUL F. FRITZ — Exp. 06/30/2021 — CIVIL — No. 16825

DATE: 05-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 05-22-20
PLOT TIME: 15:47:01

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
TRUDevCo.com

TRU Engineering

X:\Projects\19-007\Civil\DWG\Production\19-007c1.01 COVR.dwg
Paul Fritz

MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

PROJECT DATA SHEET

DRAWING
C1.02
2 OF 15 SHTS

107v00000

CITY OF LAS VEGAS TRAFFIC SIGNAL NOTES (LD)

1. ALL WORK PERFORMED ON ANY TRAFFIC SIGNAL COMPONENT MUST BE UNDER THE DIRECT ON-SITE SUPERVISION OF AN IMSA CERTIFIED TECHNICIAN. THE LEVEL OF CERTIFICATION REQUIRED SHALL BE LEVEL II.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ALL EXISTING UTILITIES. THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES TO VERIFY IN THE FIELD THE LOCATIONS OF THEIR INSTALLATIONS 72 HOURS PRIOR TO CONSTRUCTION.

CALL-BEFORE-YOU-OVERHEAD	1-702-227-2929
CALL-BEFORE-YOU-DIG	1-800-227-2600
STREETLIGHTS	1-702-229-6331
F.A.S.T.	1-702-432-5300

3. ALL TRAFFIC SIGNAL INSTALLATIONS SHALL CONFORM TO THE UNIFORM STANDARD DRAWINGS SPECIFICATIONS AND SPECIAL PROVISIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, VOLUMES I AND II, ADOPTED BY THE REGIONAL TRANSPORTATION COMMISSION APRIL 8, 1992 WITH ALL SUBSEQUENT REVISIONS. BRACKET MOUNTED (SIDE-MOUNTED) VEHICLE SIGNAL ASSEMBLIES WITH 2 OR MORE SIGNAL HEADS SHALL HAVE AN ADDITIONAL ELBOW AS SHOWN IN UNIFORM STANDARD DRAWING NUMBER 863 AND SHOWN AS OPTION B IN UNIFORM STANDARD DRAWING NUMBER 844, AND SHALL HAVE A MENERALLAC SUPPORT AS SHOWN IN UNIFORM STANDARD DRAWING NUMBER 863 IF ONE OF THE SIGNAL HEADS CONTAINS 4 OR MORE SIGNAL MODULES.

4. SERVICE SHALL HAVE 1-60 AMP SINGLE POLE BREAKER FOR SIGNAL, AND ONE 40 AMP SINGLE POLE BREAKERS FOR STREET LIGHTS. SERVICE SHALL BE 200 AMP PADMOUNT.

5. LINE SIDE OF METER TO BE WIRED WITH THREE #3/0 AWG THW. LOAD SIDE SHALL BE WIRED WITH FOUR #4 AWG THW (2 BLACK, 2 WHITE) AND ONE #8 AWG THW (GREEN).

6. LUMINAIRES ON ALL SIGNAL POLES SHALL BE L.E.D. AS APPROVED BY THE CITY OF LAS VEGAS (CLV). DESIGN PROFESSIONAL AND CONTRACTOR SHALL VERIFY CITY'S LATEST LED FIXTURE SPECIFICATIONS AND APPROVED FIXTURES PER CLV WEBSITE, UNDER BUILDING AND SAFETY FORMS, PRIOR TO ORDERING MATERIALS. INTERSECTION LIGHTING SHALL MEET THE REQUIREMENTS OF UNIFORM STANDARD DRAWING NUMBER 300.S.3. EACH LUMINAIRE SHALL HAVE AN INDIVIDUAL 1000 WATT P.E. CONTROL FOR LUMINAIRES THERE SHALL BE 2(TWO)-#4 AWG THW CONDUCTORS FROM THE SERVICE TO THE CABINET. IN THE CABINET, THE #4 AWG THW CONDUCTORS SHALL BRANCH OFF INTO #10 AWG THW CONDUCTORS INDIVIDUALLY FUSED WITH 10 AMP FUSES. THERE SHALL BE NO SPLICES BETWEEN THE CABINET AND LUMINAIRE FIXTURES.

7. THE INTERNALLY ILLUMINATED STREET NAME SIGNS SHALL BE WIRED TO THE LUMINAIRES PHOTO CELL FOR CONTROL WITH #10 AWG THW COPPER STRANDED WIRE (TYPICAL). THE SIGN SHALL BE WIRED TO THE LUMINAIRE DIRECTLY ABOVE IT. IN THE EVENT THERE IS NO LUMINAIRE ON THE TRAFFIC SIGNAL POLE, THE 1000 WATT P.E. CONTROL SHALL BE MOUNTED ON THE POLE CAP. ALL NEW ILLUMINATED STREET NAME SIGNS SHALL HAVE LIGHT EMITTING DIODE (LED) LAMPS PER SECTION 623 T.02.16 OF THE SPECIAL PROVISIONS.

8. CHECK CONDUIT AND CABLE SCHEDULE FOR CONDUIT, CABLE, AND WIRE SIZE. VERIFY ALL EXISTING CONDUIT RUNS.

9. ALL PULLBOXES SHALL BE IN ACCORDANCE WITH UNIFORM STANDARD DRAWINGS NO. 705, NO. 706, AND NO. 707.

10. TRAFFIC SIGNAL CABLE SHALL BE 15 OR 25 CONDUCTOR #14 AWG SOLID (TYPICAL) CABLE AND SHALL CONFORM TO IMSA SPEC. NO. 20-1.

11. PEDESTRIAN PUSH BUTTONS SHALL BE AUDIBLE TACTILE "POLARA iNAVIGATOR" TYPE (2-WIRE PEDESTRIAN PUSHBUTTON SYSTEM WITH iN2 PUSH BUTTON STATIONS AND SHELF-MOUNT BIU CONTROL UNIT WITH SDLC CABLE) OR CAMPBELL COMPANY WAPPS WIRELESS PEDESTRIAN PUSHBUTTON SYSTEM WITH APC iN ACCORDANCE WITH CITY OF LAS VEGAS SPECIAL PROVISIONS AND SECTION 623 OF THE CCA USS. PUSH BUTTON SIGNS SHALL BE R10-3e PER MUTCD, 2009 EDITION, WITH FULL MOUNTING BRACKETS, AS MODIFIED BY THE MANUFACTURER TO FIT ON A 9"X12"SIGN, AND SHALL BE PORCELAIN-ENAMELED METAL. ALL PUSH BUTTONS TO BE MOUNTED 42" ABOVE SIDEWALK MAXIMUM HORIZONTAL REACH DISTANCE IS TO BE 10". SIDEWALK RAMPS WILL BE ACCORDING TO U.S.D. No. 235 (1-4) LATEST EDITION. WHEN AN EXISTING SIGNAL WITH EXISTING AUDIBLE-TACILE PUSH BUTTONS IS MODIFIED, THE CONTRACTOR SHALL VERIFY NEW PEDESTRIAN PUSH BUTTONS OR CABINET EQUIPMENT MATCHES THE MANUFACTURE AND MODEL OF ANY EXISTING EQUIPMENT SCHEDULED TO REMAIN, TO PROVIDE A FULLY FUNCTIONING SYSTEM. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL CABINET EQUIPMENT, INCLUDING THE PEDESTRIAN PUSH BUTTON CONTROL UNIT, INTERFACE PANEL AND ANY REQUIRED HARNESSES, TO PROVIDE A FULLY FUNCTIONING SYSTEM.

12. THE ROUTING AND TERMINATION OF CONDUITS AND THE PLACING OF POLES AND CABINETS SHALL BE AS INDICATED ON THE PLANS. ALL CHANGES SHALL BE APPROVED BY THE ENGINEER.

13. MAST ARM R10-12 SIGNS TO BE ADJACENT (NO GAP) TO THE M-5 SIGNAL HEAD. WHERE FLASHING YELLOW ARROW LEFT TURN SIGNALS ARE USED, A MAST ARM R10-12F LEFT TURN YIELD ON FLASHING YELLOW ARROW SIGN SHALL BE MOUNTED ADJACENT TO THE M-4 SIGNAL HEAD.

14. TRAFFIC SIGNAL CABINET SHALL BE A TYPE VIII CABINET UNLESS OTHERWISE SPECIFIED IN THE PLANS. THIS IS COMMONLY REFERRED TO AS AN "R" CABINET. THE CABINET SHALL CONFORM TO THE CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS AND THE CITY OF LAS VEGAS SPECIAL PROVISIONS. INSTALL CABINET NEAR THE R.O.W. LINE OR AS SHOWN ON THE DRAWINGS. THE TRAFFIC SIGNAL CONTROLLER CABINET, SHALL BE EQUIPPED WITH 16 LOAD BAY POSITIONS,SHALL BE A 48 DETECTOR CHANNEL R CABINET AND SHALL INCLUDE TWO (2) RACK-MOUNTED, 12 SLOT, LOOP DETECTOR RACKS, WITH 2 DETECTOR LOOP CHANNELS PER SLOT FULLY WIRED SO THAT ALL CHANNELS ARE USABLE AND 4 CHANNEL SLOTS THAT CAN ACCOMMODATE VIDEO DETECTION CARDS. THE CABINET SHALL CONTAIN A 764 OPTICOM PHASE SELECTOR IN A 760 RACK, WITH A 768 AUXILIARY INTERFACE PANEL MOUNTED IN THE CABINET AND FULLY WIRED FOR GREEN SENSE CAPABILITIES.

15. THE CONTRACTOR SHALL SUPPLY A MALFUNCTION MANAGEMENT UNIT (MMU) AND TRAFFIC SIGNAL CONTROLLER TO THE CITY OF LAS VEGAS TRAFFIC SIGNAL REPAIR SHOP A MINIMUM OF FOURTEEN DAYS PRIOR TO SIGNAL TURN-ON OR PRIOR TO CONVERTING TO A NEW PHASING SCHEME, FOR TESTING AND PROGRAMMING PURPOSES. THE CONTROLLER SHALL BE A NAZTEC 980 ATC TS2 TYPE 2 NTCIP COMPLIANT SIGNAL CONTROLLER WITH INTSTALLED AND LICENSED APOGEE CONTROLLER SOFTWARE, LATEST VERSION, AND THE MMU SHALL BE A MODEL MMU-1600QE AS MANUFACTURED BY RENO A&E., OR APPROVED EQUAL. THE CONTRACTOR SHALL DELIVER THE CONTROLLER AND MMU TO, AND PICKUP THE CONTROLLER AT 2985 RONEMUS DRIVE. CONTRACTOR SHALL NOTIFY THE TRAFFIC SIGNAL REPAIR SHOP (229-6076) SEVEN DAYS PRIOR TO PICK UP. THE CITY, AT ITS DISCRETION, MAY PROVIDE A DIFFERENT MODEL OF MMU OR CONTROLLER FOR INITIAL TURN-ON, IN WHICH CASE CITY PERSONNEL WILL SWAP THE CONTROLLER OR MMU AFTER THE PROJECT IS ACCEPTED.

16. CONTRACTOR SHALL POTHOLE SIGNAL POLE LOCATIONS PRIOR TO ORDERING OF POLES.

17. ALL MAST ARMS TO BE HOT-DIP GALVANIZED BY THE MANUFACTURER THE MAST ARM IS TO BE FABRICATED WITH END TENON ONLY. THE END TENON SHALL BE FACTORY INSTALLED AND THE REMAINING TENONS SHALL BE FABRICATED IN THE FIELD AT THE LOCATION SHOWN ON THE PLANS OR AS DIRECTED BY THE TRAFFIC ENGINEER AND/OR HIS AUTHORIZED REPRESENTATIVE. FOR TENON FABRICATION DETAILS SEE CLARK COUNTY AREA U.S.D. NO. 808 SHEET 2. ALL WELDING SHALL CONFORM TO AWS D 2.0, "SPECIFICATION FOR WELDED HIGHWAYS AND RAILWAY BRIDGES," AND TO ANY ADDITIONAL REQUIREMENTS OF SECTION 623 OF THE SPECIFICATIONS. ALL EXPOSED WELDS, SHALL BE PAINTED AS PROVIDED FOR REPAIRING DAMAGED GALVANIZED SURFACES.

18. ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL HAVE LIGHT EMITTING DIODE (LED) TYPE INDICATIONS, IN CONFORMANCE TO CITY OF LAS VEGAS SPECIAL PROVISIONS AND TO SECTION 623 OF THE USSCCA. ALL PEDESTRIAN SIGNAL FACES SHALL PROVIDE "WALKING PERSON", "HAND", AND "COUNTDOWN" MESSAGES AS PROVIDED BY DURALIGHT MODEL #JXM-400-VIEIL OR DIALIGHT MODEL #430-6479-001X, OR APPROVED EQUAL. THE "COUNTDOWN" MESSAGE SHALL NOT FLASH. WHERE EXISTING SIGNALS ARE MODIFIED, THE CONTRACTOR SHALL VERIFY THAT LED PEDESTRIAN INDICATIONS FOR A SPECIFIC PHASE ARE OF THE SAME MANUFACTURE SO THAT THEY FUNCTION CORRECTLY, OR SHALL REPLACE ALL COUNTDOWN PEDESTRIAN INDICATIONS FOR THAT PHASE.

19. VIDEO DETECTION SYSTEMS SHALL BE TS2 COMPATIBLE AND SHALL INPUT DETECTOR CALLS TO THE CONTROLLER THROUGH AN SDLC CABLE. SYSTEMS WILL BE EITHER ITERIS EDGE 2-1iN PROCESSORS WITH VRACKS-PS, EDGE2-TS2-iM-PAK AND EDGECONNECT PAK, (IP ADDRESSABLE); PEEK VIDEOTRAK iQ (WITH ETHERNET PORT AND SDLC); OR TRAFICON VIP WITH VIEWCOM (IP ADDRESSABLE) AND PIM (SDLC). WHEN VIDEO DETECTION IS SPECIFIED ON THE TRAFFIC SIGNAL PLANS. ALL VIDEO DETECTION SYSTEMS WILL BE STAND ALONE SYSTEMS TO INCLUDE ALL NECESSARY EQUIPMENT TO PROGRAM THE VIDEO DETECTION SYSTEM. A PROGRAMMING "MOUSE", KEYPAD OR LAPTOP COMPUTER (IF REQUIRED FOR PROGRAMMING THE VIDEO DETECTION SYSTEM) AND APPROPRIATE SOFTWARE WILL BE SUPPLIED WITH EACH VIDEO SYSTEM. PERSONAL COMPUTERS (PCs) MAY NOT BE SUBSTITUTED FOR LAPTOPS. A VIDEO MONITOR (COLOR FLAT SCREEN) 9" TO 13" WILL BE SUPPLIED WITH EACH VIDEO DETECTION SYSTEM. EACH VIDEO CAMERA WILL HAVE POWER AND VIDEO CABLE DIRECTLY FROM THE CABINET. COAXIAL CABLE WILL BE TYPE RG81 (SOLID CENTER CONDUCTOR). CAMERAS THAT USE A PREFABRICATED CABLE INTEGRATING POWER AND COAXIAL CABLE INTO A SINGLE WEATHERPROOF CONNECTOR ARE ACCEPTABLE. "BNC" ARE THE ONLY ACCEPTABLE TERMINATION OF COAXIAL CABLES. CAMERAS WILL BE MOUNTED PER MANUFACTURER'S RECOMMENDATIONS AND PER CLV TRAFFIC ENGINEER APPROVAL. VIDEO CAMERAS SHALL BE COLOR AND SHALL BE MOUNTED ON A MINIMUM 6 FOOT RISER ON THE SIGNAL MAST ARM WITH EXTENSION BRACKETS (TYPE AG-0175-74-62 OR EQUIVALENT). THE LOCATION OF THE CAMERA ON THE MAST ARM SHALL BE APPROVED BY THE TEFO TRAFFIC SIGNAL SUPERVISOR. A VIDEO FILTER (CX06-BNYC OR EQUIVALENT) WILL BE INSTALLED IN THE SIGNAL CABINET FOR EACH CAMERA VIDEO INPUT. VIDEO DETECTION PROCESSORS AND COMMUNICATIONS CARDS SHALL BE PROVIDED WITH THE LATEST VERSIONS OF THE MANUFACTURER'S SOFTWARE. THE CONTRACTOR SHALL AIM CAMERAS AND PROGRAM AND CONFIGURE THE VIDEO DETECTION PROCESSORS TO PROVIDE A FULLY FUNCTIONING SYSTEM.

20. WHERE NEW LOOPS WILL BE OVERLAID WITH NEW PAVEMENT, LOOP DETECTORS SHALL BE PREFORMED LOOPS AS MANUFACTURED BY RENO A & E OR NEVER-FAIL LOOP SYSTEMS, AND ALL LOOPS SHALL BE INSTALLED IN THE ROADWAY PRIOR TO PLACEMENT OF THE FINAL PAVEMENT LIFT. WHERE NEW LOOPS ARE INSTALLED THAT ARE NOT OVERLAID WITH NEW PAVEMENT, LOOPS SHALL BE CABLE-iN-DUCT PER SECTION 623 T.02.04.C OF THE CITY OF LAS VEGAS SPECIAL PROVISIONS. LOOP LEAD-iN CABLE SHALL BE 6-PAIR 18 AWG MULTIPLE CONDUCTOR CABLE AS SPECIFIED iN SECTION 623T.02.04 OF THE CLV SPECIAL PROVISIONS. ALL WIRING HARNESSES, RACK POSITIONS, AND LOOP LEAD-iN CABLE SHALL BE CLEARLY MARKED AS TO THE APPROPRIATE PHASE AND LETTER DESIGNATION TO WHICH IT BELONGS AS SHOWN ON THE TRAFFIC SIGNAL PLANS. LOOPS SHALL BE LOCATED AS SHOWN ON THE TRAFFIC SIGNAL PLANS AND APPROVED BY THE CLV TRAFFIC ENGINEERING DIVISION PRIOR TO INSTALLATION. REFER TO SECTION 623T.02.04 OF THE CLV SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

21. OPTICAL PREEMPTION UNITS WILL BE GLOBAL TRAFFIC TECHNOLOGIES (ENCODING CAPABLE), MODEL 764 OPTICOM PHASE SELECTOR INSTALLED iN A MODEL 760 RACK WITH A MODEL 768 AUXILIARY INTERFACE PANEL (AIP) MOUNTED IN THE CABINET AND FULLY WIRED FOR GREEN SENSE CAPABILITIES. OPTICAL SENSORS WILL BE MODEL 721 WITH ONE DETECTOR PER DIRECTION, UNLESS SHOWN OTHERWISE IN THE PLANS, AND WILL BE INTERFACED TO THE TRAFFIC SIGNAL CONTROLLER CABINET WITH M-138 CABLE. THE SOUTHBOUND OPTICOM DETECTOR SHALL BE WIRED TO INPUT PREEMPTS ON CHANNEL 1 iN THE PHASE SELECTOR, EASTBOUND ON CHANNEL 2, NORTHBOUND ON CHANNEL 3, AND WESTBOUND ON CHANNEL 4. CROSS VARIATIONS ARE APPROVED BY THE TRAFFIC SIGNAL SUPERVISOR. WHEN 764 PHASE SELECTORS ARE ADDED TO A CABINET WITHOUT A 768 AIP, THE CONTRACTOR SHALL INSTALL AND WIRE A NEW 768 AIP.

22. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY CONSTRUCTION, TEMPORARY REMOVAL, OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED AT THE CONTRACTORS EXPENSE TO THE SATISFACTION OF THE CITY.

23. INTERCONNECT CABLE SHALL BE AS SHOWN IN THE WIRE SCHEDULE.

24. THE CONTRACTOR SHALL INSTALL CROSSWALKS, STOP BARS, STRIPING AND SIGNS AS IDENTIFIED ON THE PLANS.

25. WHERE THE PLANS CALL FOR REMOVAL AND SALVAGE OF EXISTING TRAFFIC SIGNAL EQUIPMENT, THE CONTRACTOR SHALL CALL 702-229-6331 TO SPEAK TO A TRAFFIC FIELD SUPERVISOR TO ARRANGE FOR DELIVERY TIMES AND LOCATIONS.

26. THE CONTRACTOR SHALL MAINTAIN EXISTING SIGNALS THROUGH THE LIFE OF THE PROJECT PER SECTION 623 G.03.01N OF THE CLV SPECIAL PROVISIONS.

REVISED SEPTEMBER 19, 2018

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 ADVANCED 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 "SUGGESTED 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 UTILIZE TYPE XI RETROREFLECTIVE SHEETING IN ACCORDANCE WITH USSCCA 627 AND 716 AND SHALL HAVE AN ANTI-GRAFFITI PROTECTIVE OVERLAY FILM THAT IS A MATCHING COMPONENT TO, AND OF THE SAME MANUFACTURE AS THE RETROREFLECTIVE SHEETING TO WHICH IT IS APPLIED. STREET NAME 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 STANDARDS.

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 STREET LIGHT 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 STOP 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 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 TO THE TRAVELING PUBLIC.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA (RTC) 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 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.

REVISED JUNE 4,2018

FLOOD ZONE NOTE

NO PORTION OF THE PROJECT SITE FALLS WITHIN A FEMA DESIGNATED SPECIAL FLOOD HAZARD AREA. THE SITE IS LOCATED ON PANEL 32003C2145F, DATED NOVEMBER 16, 2011. THIS PANEL SHOWS THAT THE PROJECT IS LOCATED WITHIN ZONE X AND NOT LOCATED WITHIN A FEMA DESIGNATED 100-YEAR ZONE A OR SPECIAL FLOOD HAZARD AREA.

DEVIATION FROM STANDARD

NONE

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # 126XXX (Revised 08/01/2017)

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 # IDENTIFIED 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 OF 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 AND APPURTENANCES SHALL BE DISINFECTED, PRESSURE TESTED, AND HAVE AN ACCEPTABLE PASSING HEALTH WATER SAMPLE OBTAINED, PRIOR TO OPERATION AND USE.

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 APPROVED PRODUCT'S LIST FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.

13. TELEPHONE "CALL BEFORE YOU DIG"AT "811"OR 1-800-227-2600.

14. THE INSTALLATION OF 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 AN APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON THE STREET SURFACE.

ANY DECORATIVE PAVING SURFACE WITHIN THE STREET IS THE 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 LVVWD WITH AN APPROPRIATELY SIZED PLAIN FINISH CONCRETE PATCH. THE LVVWD WILL NOT RESTORE, AND WILL NOT BE RESPONSIBLE FOR THE RESTORATION OF, ANY DECORATIVE PAVING SURFACE WITHIN THE STREET. THE LVVWD WILL NOT ATTEMPT TO MATCH COLOR OR FINISH OF ANY ADJACENT MATERIALS.

15. NO LEAD COMPLIANCE NOTE: TO COMPLY WITH THE FEDERAL SAFE DRINKING WATER ACT, ALL WATER WORKS BRASS PRODUCTS PROPOSED TO BE RELOCATED, OR INSTALLED AS NEW MUST BE INSTALLED WITH THE LEAD-FREE APPROVED PRODUCT. THE OLD LEADED PRODUCT MAY NOT BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE: _____.

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 CONTENTS 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. STREETS 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") OR 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 INCH (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.

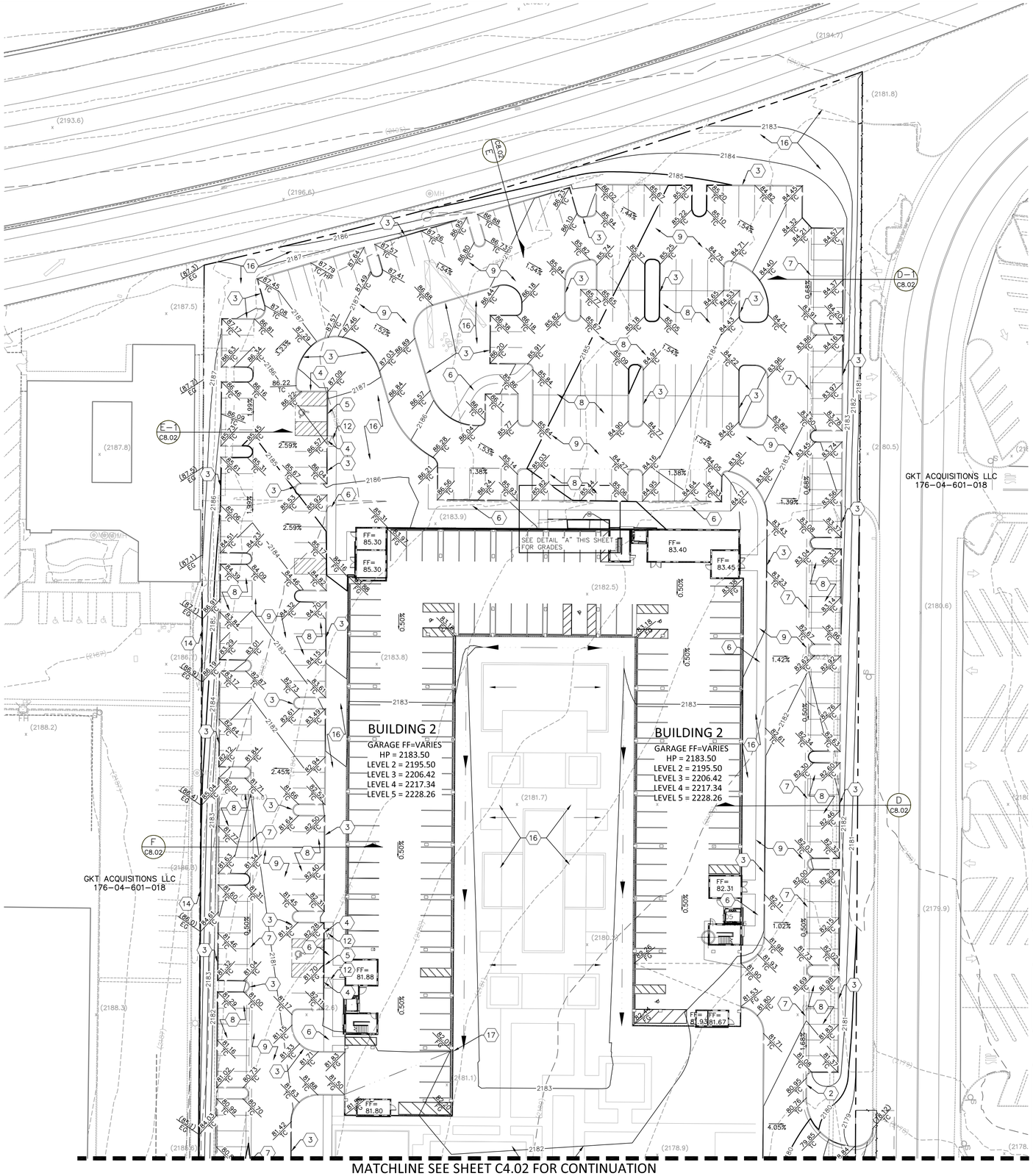
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.

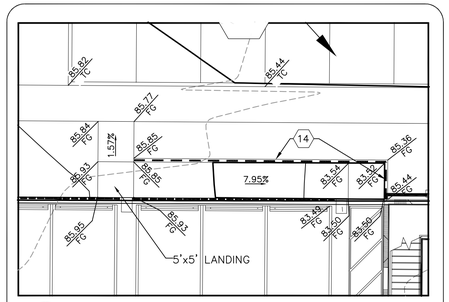
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

REVISED 04/15/10

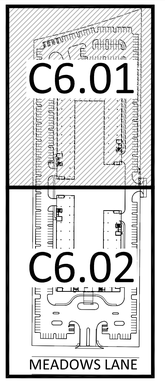
CITY OF LAS VEGAS STREETLIGHT NOTES

1. ALL STREET LIGHTING INSTALLATIONS





A PARKING ACCESS ADA RAMP
SCALE: 1" = 10'



KEY MAP

CONSTRUCTION NOTES

NO.	ITEM USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL COMMERCIAL DRIVEWAY PER USDCCA DWG NO. 222.1, 225 AND 228
2	INSTALL "L" CURB AND GUTTER PER USDCCA DWG NO. 216
3	INSTALL "A" TYPE CURB PER DETAIL "1" SHEET C8.01
4	INSTALL 6" TO 0" CURB TRANSITION. SEE DETAIL "2" SHEET C8.01
5	INSTALL 0"/FLUSH CURB PER DETAIL "3" SHEET C8.01
6	INSTALL 4" THICK CONCRETE SIDEWALK PER USDCCA DWG NO. 234. SEE PLANS FOR WIDTH
7	INSTALL 3' WIDE CONCRETE VALLEY GUTTER PER DETAIL "4" SHEET C8.01
8	INSTALL 2.5" AC OVER 4" TYPE II AGG. BASE PAVEMENT SECTION (AUTO PARKING) PER DETAIL "5" SHEET C8.01 AND GEOTECHNICAL REPORT
9	INSTALL 3.5" AC OVER 7" TYPE II AGG. BASE PAVEMENT SECTION (TRUCK ACCESS) PER DETAIL "5" SHEET C8.01 AND GEOTECHNICAL REPORT
10	INSTALL SIDEWALK RAMP CASE I ("A", "B" PER PLAN AS MEASURED FROM BACK OF WALK) PER USDCCA DWG. NO. 235
11	SAWCUT LINE TO A SMOOTH EDGE AND FEATHER IN TO MATCH EXISTING ASPHALT GRADE PER USDCCA DWG. NO. 500.4 & 500.5 & 503
12	INSTALL SIDEWALK RAMP. SLOPE NOT TO EXCEED 1:12
13	TRASH ENCLOSURE SEE ARCHITECTURAL PLANS FOR DETAILS
14	INSTALL CMU BLOCK RETAINING WALL SEE SITE STRUCTURAL PLANS FOR DETAILS
15	INSTALL CONCRETE FLUME PER DETAIL "6" SHEET C8.01
16	LANDSCAPE AREA. SEE LANDSCAPE PLANS FOR DETAILED DESIGN AND ADDITIONAL GRADING
17	PROVIDE 2'x1' OPENING IN GARAGE WALL FOR DRAINAGE
18	INSTALL MOD. TYPE "C" DROP INLET PER USDCCA DWG. NO. 412.1 SEE DRAWING FOR "L" AND "D"
19	INSTALL 18" HDPE SD PIPE PER UDACS PLATE NO. 16
20	CONNECT TO EXISTING 24" RCP PER DETAIL 7 SHEET C8.01

ELEVATION NOTE

ADD 2100' TO ALL GRADE TAG ELEVATIONS.

FLOOD ZONE NOTE

THE SITE IS LOCATED ON FEDERAL EMERGENCY AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) CONTAINING COMMUNITY PANEL 32003C 2165D, DATED NOVEMBER 16, 2011. THIS PANEL SHOWS THAT THE PROJECT IS NOT LOCATED WITHIN ZONE A. THE SITE IS WITHIN ZONE X AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

DRAINAGE CERTIFICATION

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, DS1000

PAUL F. FRITZ, PE NO. 16825 DATE

GEOTECHNICAL REPORT

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "GEOTECHNICAL EXPLORATION REPORT THE APEX AT MEADOWS"
- PROJECT NO.: G-20-039, DATED APRIL 8, 2020

PREPARED BY: NOVA GEOTECHNICAL & INSPECTION SERVICES
4480 WEST HACIENDA AVE., SUITE 104
LAS VEGAS, NV 89118
PHONE NO. (702) 873-3478
FAX NO. (702) 873-2199

ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

N
TRU ENGINEERING SCALE: 1"=30'

20' 0 20' 40'
SCALE
SCALE: 1"=30'
FEET

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

BASIS OF BEARINGS

NORTH 89°18'55" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., SHOWN AS NORTH 89°41'09" WEST IN FILE 124, PAGE 59 OF PARCEL MAPS, ON FILE AT THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK

CCBM#		ELEVATION	DESCRIPTION
1LV0131 NWW6	S E T	670.32 (M) 2199.22 (FT.)	CITY OF LAS VEGAS BENCHMARK 1LV0131NWW6 RIVET AND PLATE IN TOP OF CURB AT NORTHEAST CORNER OF DECATUR AND MEADOWS LANE ON SIGNAL POLE ISLAND.

BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88). PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUMS. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS IN CONJUNCTION WITH OLDER DRAWINGS.

No.	DATE	DESCRIPTION	DATE	INITIAL

DATE: 05-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 05-22-20
PLOT TIME: 17:04:37

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
TRUDevCo.com

TRU Engineering

X:\Projects\19-007\Civil\DWG\Production\19-007c4.00 GRAD.dwg
Paul Fritz

MEADOWS OWNERS, LLC

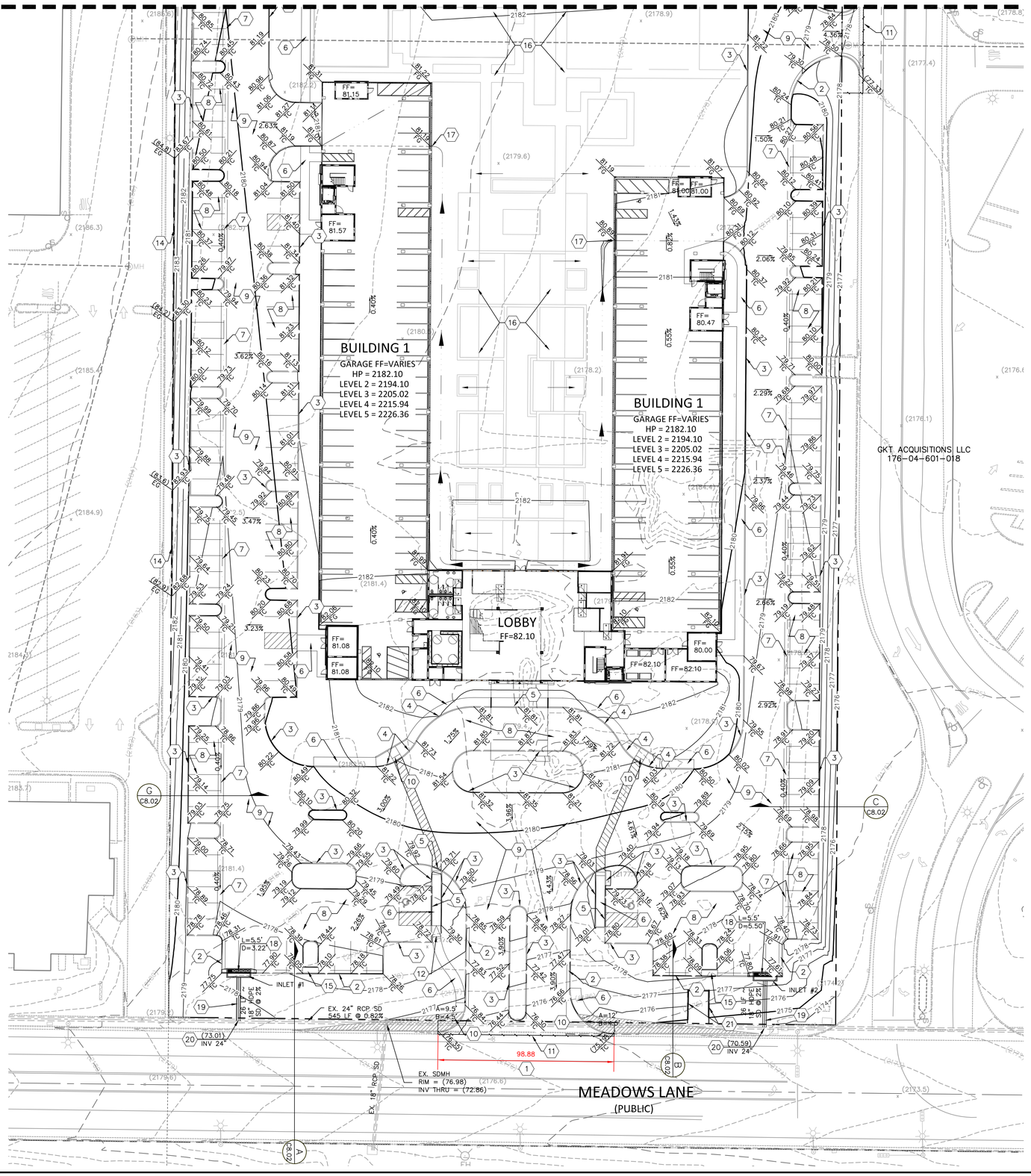
MULTIFAMILY AT THE MEADOWS

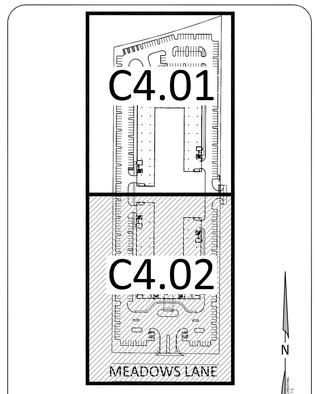
GRADING PLAN 1

DRAWING
C4.01
7 OF 15 SHTS

107v00000

MATCHLINE SEE SHEET C4.01 FOR CONTINUATION





KEY MAP

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8	INSTALL 2.5" AC OVER 4" TYPE II AGG. BASE PAVEMENT SECTION (AUTO PARKING) PER DETAIL "5" SHEET C8.01 AND GEOTECHNICAL REPORT
9	INSTALL 3.5" AC OVER 7" TYPE II AGG. BASE PAVEMENT SECTION (TRUCK ACCESS) PER DETAIL "5" SHEET C8.01 AND GEOTECHNICAL REPORT
10	INSTALL SIDEWALK RAMP CASE I ("A", "B" PER PLAN AS MEASURED FROM BACK OF WALK) PER USDCCA DWG. NO. 235
11	SAWCUT LINE TO A SMOOTH EDGE AND FEATHER IN TO MATCH EXISTING ASPHALT GRADE PER USDCCA DWG. NO. 500.4 & 500.5 & 503
12	INSTALL SIDEWALK RAMP. SLOPE NOT TO EXCEED 1:12
13	TRASH ENCLOSURE SEE ARCHITECTURAL PLANS FOR DETAILS
14	INSTALL CMU BLOCK RETAINING WALL SEE SITE STRUCTURAL PLANS FOR DETAILS
15	INSTALL CONCRETE FLUME PER DETAIL "6" SHEET C8.01
16	LANDSCAPE AREA. SEE LANDSCAPE PLANS FOR DETAILED DESIGN AND ADDITIONAL GRADING
17	PROVIDE 2'x1' OPENING IN GARAGE WALL FOR DRAINAGE
18	INSTALL MOD. TYPE "C" DROP INLET PER USDCCA DWG. NO. 412.1 SEE DRAWING FOR "L" AND "D"
19	INSTALL 18" HDPE SD PIPE PER UDACS PLATE NO. 16
20	CONNECT TO EXISTING 24" RCP PER DETAIL 7 SHEET C8.01

ELEVATION NOTE

ADD 2100' TO ALL GRADE TAG ELEVATIONS.

FLOOD ZONE NOTE

THE SITE IS LOCATED ON FEDERAL EMERGENCY AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) CONTAINING COMMUNITY PANEL 32003C 2165D, DATED NOVEMBER 16, 2011. THIS PANEL SHOWS THAT THE PROJECT IS NOT LOCATED WITHIN ZONE A. THE SITE IS WITHIN ZONE X AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

DRAINAGE CERTIFICATION

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, DS1000

PAUL F. FRITZ, PE NO. 16825 DATE

GEOTECHNICAL REPORT

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "GEOTECHNICAL EXPLORATION REPORT THE APEX AT MEADOWS"
- PROJECT NO.: G-20-039, DATED APRIL 8, 2020

PREPARED BY: NOVA GEOTECHNICAL & INSPECTION SERVICES
4480 WEST HACIENDA AVE., SUITE 104
LAS VEGAS, NV 89118
PHONE NO. (702) 873-3478
FAX NO. (702) 873-2199

ALL WORK SHALL BE PERFORMED UNDER THE DIRECTION OF A REGISTERED PROFESSIONAL SOILS ENGINEER.

SCALE: 1"=30'

Call before you Dig
Avoid cutting underground utility lines, it's costly.
Call 811 OR 1-800-227-2800

AVOID HITTING OVERHEAD POWER LINES, IT'S COSTLY
CALL BEFORE YOU DIG OVERHEAD
1-702-227-2929

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

BASIS OF BEARINGS

NORTH 89°18'55" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., SHOWN AS NORTH 89°41'09" WEST IN FILE 124, PAGE 59 OF PARCEL MAPS, ON FILE AT THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK

CCBM#		ELEVATION	DESCRIPTION
1LV0131 NWW6	SITE	670.32 (M) 2199.22 (FT.)	CITY OF LAS VEGAS BENCHMARK 1LV0131NWW6 RIVET AND PLATE IN TOP OF CURB AT NORTHEAST CORNER OF DECATUR AND MEADOWS LANE ON SIGNAL POLE ISLAND.

BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88). PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUMS. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS IN CONJUNCTION WITH OLDER DRAWINGS.

No.	DESCRIPTION	DATE	INITIAL

DATE: 05-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 05-22-20
PLOT TIME: 17:04:07

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
TRUDevCo.com

TRU Engineering

X:\Projects\19-007\Civil\DWG\Production\19-007c4.00 GRAD.dwg
Paul Fritz

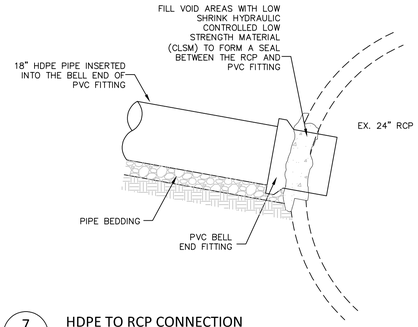
MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

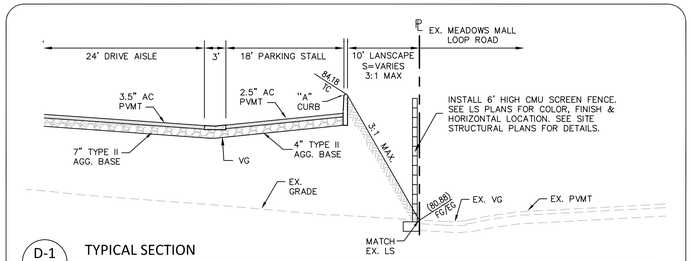
GRADING PLAN 2

DRAWING
C4.02
8 OF 15 SHTS

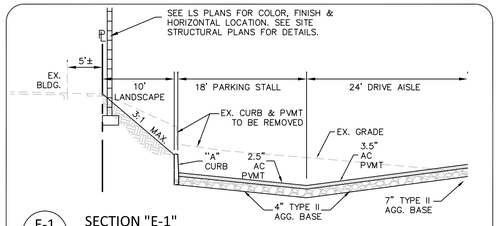
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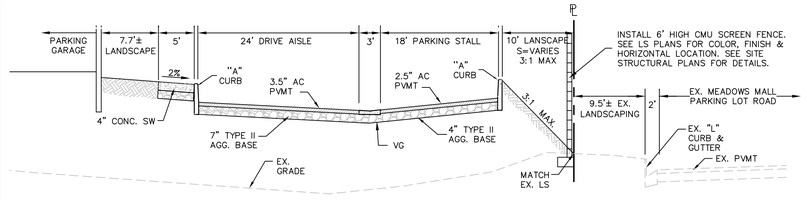
7 C4.02 **HDPE TO RCP CONNECTION**
NOT TO SCALE



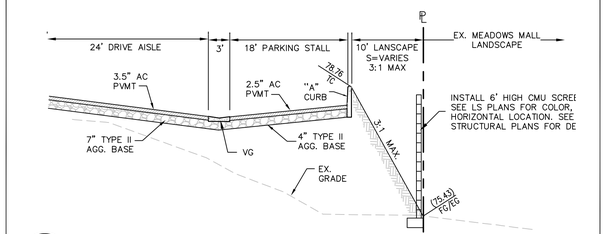
D-1 C4.01 **TYPICAL SECTION**
NOT TO SCALE



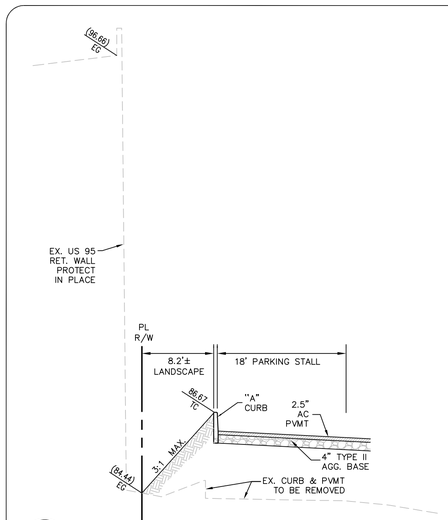
E-1 C4.01 **SECTION "E-1"**
NOT TO SCALE



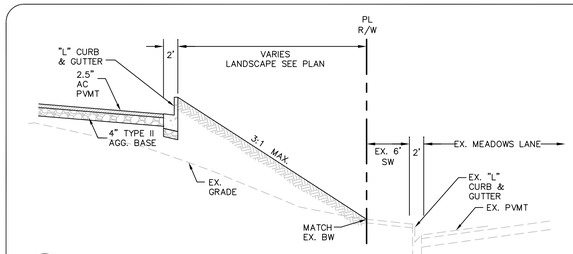
D C4.01 **SECTION "D"**
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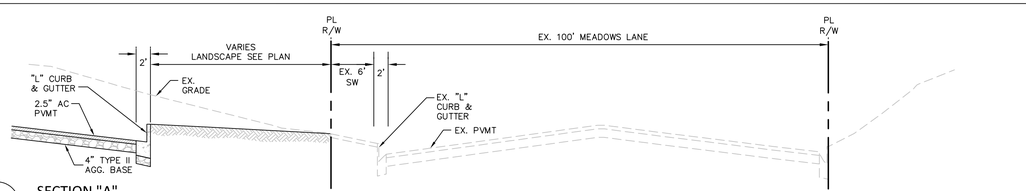
C C4.02 **SECTION "C"**
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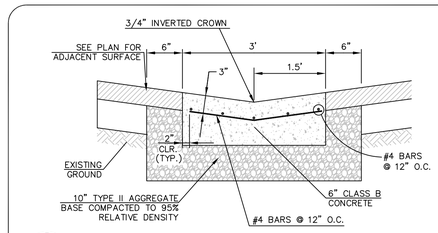
E C4.01 **SECTION "E"**
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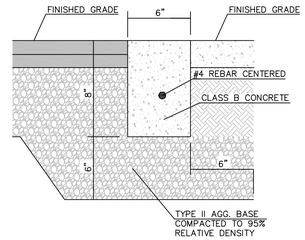
B C4.02 **SECTION "B"**
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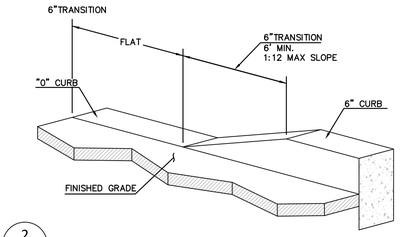
A C4.02 **SECTION "A"**
NOT TO SCALE



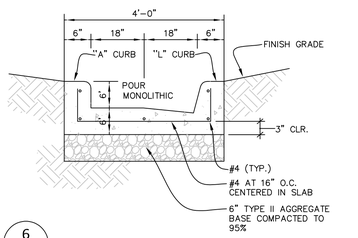
4 C8.01 **3' CONCRETE VALLEY GUTTER**
NOT TO SCALE



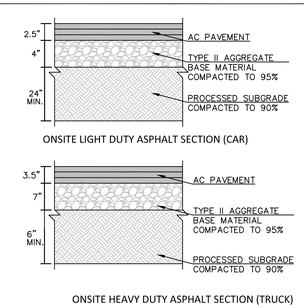
3 C8.01 **0" FLUSH CURB (MOW CURB)**
NOT TO SCALE



2 C8.01 **6" CURB TO 0" CURB TRANSITION**
NOT TO SCALE

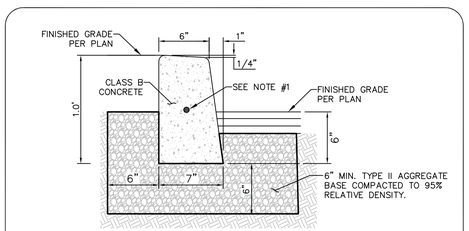


6 C8.01 **CONCRETE FLUME**
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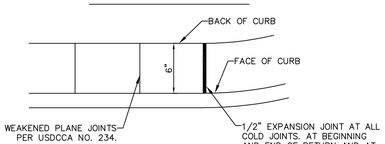


5 C8.01 **PAVING SECTION**
NOT TO SCALE

* SEE CURRENT GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION, INCL. UPDATES



TYPE 'A' CURB SECTION



TYPICAL PLAN

1 8.01 NOTES:
1. CONTINUOUS #4 REBAR IN RADIUS OF CURB ONLY.

TYPE 'A' CURB (ONSITE)
NOT TO SCALE

No.	DATE	DESCRIPTION	DATE	INITIAL

PROFESSIONAL ENGINEER - STATE OF NEVADA
PAUL F. FRITZ
Exp. 06/30/2021
CIVIL
No. 16825

DATE: 05-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 05-22-20
PLOT TIME: 13:18:02

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
TRUDevCo.com

TRU Engineering

X:\Projects\19-007\Civil\DWG\Production\19-007c8.01 DETL.dwg
Paul Fritz

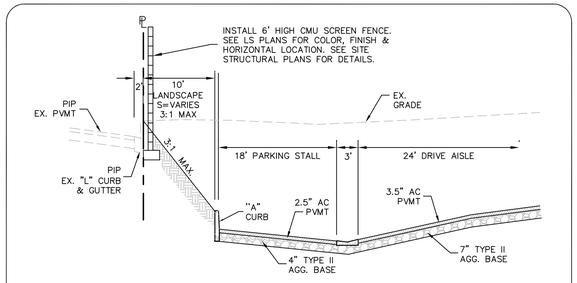
MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

DETAILS & SECTIONS 1

DRAWING
C8.01
14 OF 15 SHTS

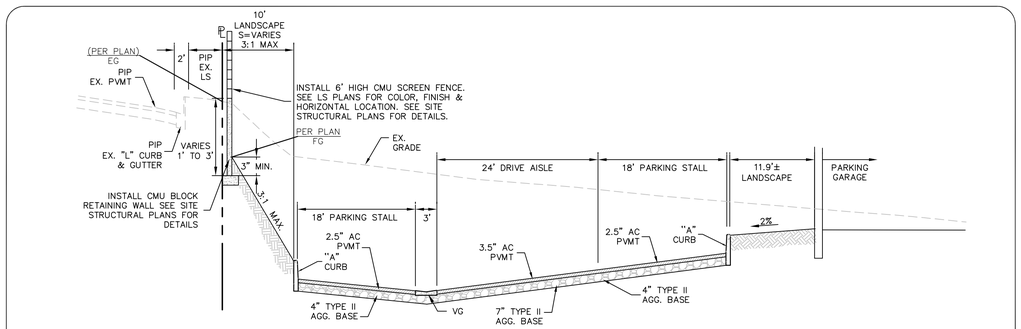
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G
C4.01

TYPICAL SECTION

NOT TO SCALE



F
C4.02

TYPICAL SECTION

NOT TO SCALE

No.	DESCRIPTION	DATE	INITIAL

PROFESSIONAL ENGINEER - STATE OF NEVADA
PAUL F. FRITZ
Exp. 06/30/2021
CIVIL
No. 16825

DATE: 05-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 05-22-20
PLOT TIME: 13:18:24

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
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TRD Engineering

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Paul Fritz

MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

DETAILS & SECTIONS 2

DRAWING
C8.02
OF 15 SHTS

107v00000

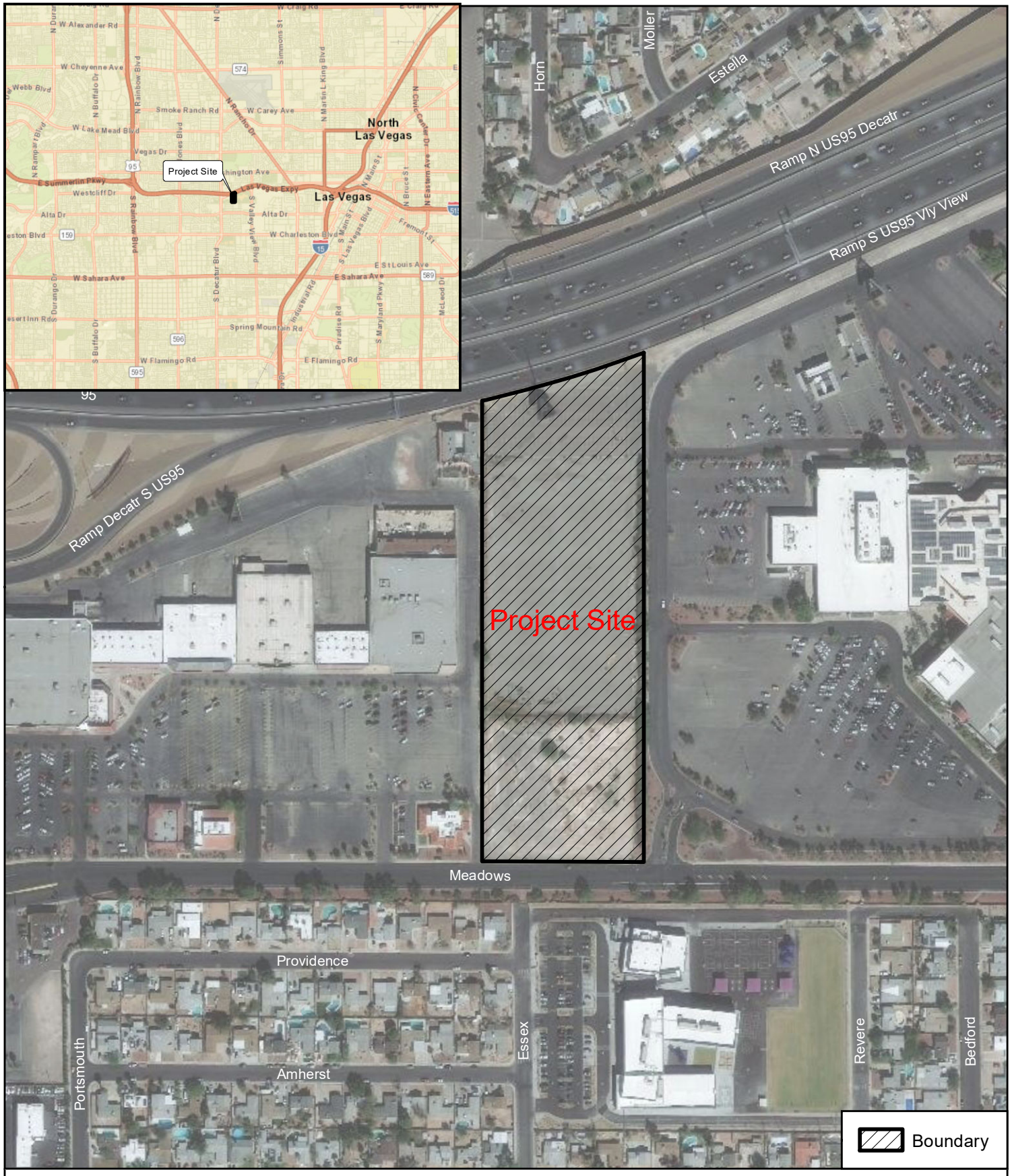


FIGURE 1

VICINITY MAP

MEADOWS MULTIFAMILY

LAS VEGAS, NV

JUNE 2020

NORTH

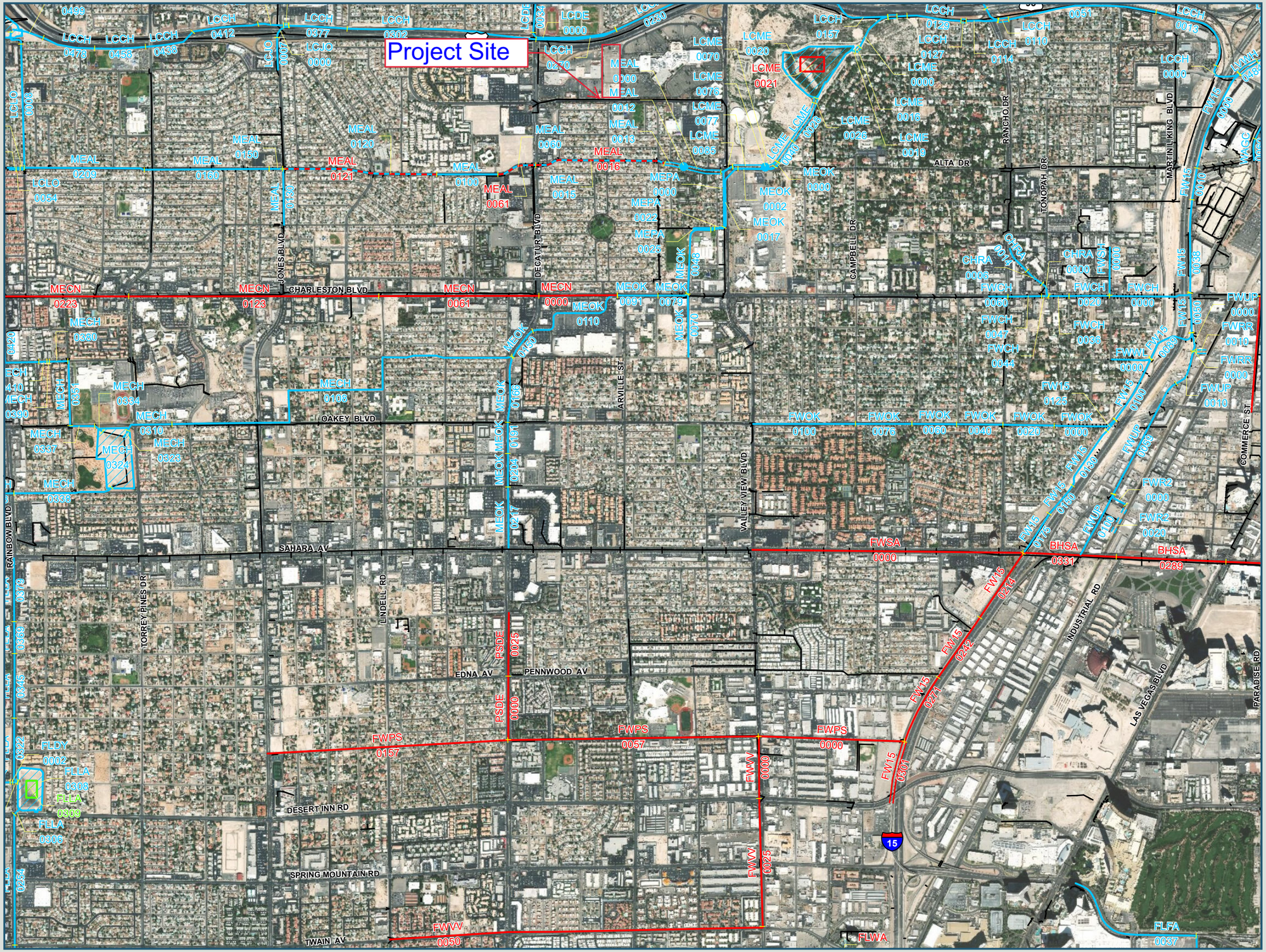
0 150 300 600

Feet

WOOD RODGERS

J:\2000-s\2997_TRU_Engineering\Meadows\GIS\Tasks\Figure 1 - Vicinity Map.mxd 6/8/2020 9:27:37 AM mberggren

Figure 2A



REGIONAL FLOOD CONTROL DISTRICT

2018
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-29

FLOOD CONTROL FACILITIES

LEGEND

- Ultimate Development Boundary
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Local Existing Facilities
- Detention Basin
- Culvert or Bridge Crossing
- Stormdrain
- Lined Channel
- Unlined Channel
- Levee/Dike
- Natural Wash/Floodway
- ID-Mile Separator

Remove & Replace/Parallel Facilities

Category A	Category B
Channel	Channel
Stormdrain	Stormdrain
Crossing	Crossing

N

0 500 1,000 2,000 3,000
Feet

Scale: 1 inch = 2,000 feet

AerialSource:Esri World Imagery 2017

ATKINS
Member of the SNC-Lavalin Group

Louis Berger

Figure 2B

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
BHSA		**BOULDER HIGHWAY SAHARA AVENUE**						
0175	P	14' X 14' RCB	6000	3952	CSA13	SW3	7.93	0.67
0289	P	14' X 12' RCB	2300	3669	CSA11	SW3	7.55	0.87
0331	P	14' X 11' RCB	2000	3346	CSA10-1	SW3	7.15	1.00
CHRA		**WEST CHARLESTON DRAINS - RANCHO**						
0000	E	6' X 5' RCB	310	302	CAL95	SW3	0.62	1.92
0006	E	5' X 5' RCB	420	302	CAL95	SW3	0.62	1.00
0014	E	5' X 4' RCB	600	302	CAL95	SW3	0.62	1.50
FLBN		**FLAMINGO - BOULDER HIGHWAY NORTH**						
0312	P	7' X 4' RCB	2160	621	CCH52	SW3	0.62	4.20
0342	P	7' X 4' RCB	2425	621	CCH52	SW3	0.62	4.20
FLDY		**FLAMINGO WASH - DARBY STORM DRAIN**						
0000	E	84" RCP	100	611	CLF24	FLAM3A	0.76	0.25
0002	E	10' X 3' RCB	50	611	CLF24	FLAM3A	0.76	0.25
0004	E	60" RCP	680	611	CLF24	FLAM3A	0.76	2.80
FLFA		**FLAMINGO - FASHION**						
0000	E	12' X 5' RCB	2050	720	CFW17N	FLAM3A	0.72	0.28
0037	E	8' X 5' RCB	3060	492	FW14	FLAM3A	0.44	0.45
FLLA		**FLAMINGO WASH - LATERAL (FLAMINGO/RAINBOW)**						
0254	E	90" RCP	2730	572	CLF27	FLAM3B	0.51	0.40
0304	P0	MODIFY SPILLWAY, RAISE HEIGHT BY 1' (REPLACES FLLA0305)		1556	CLF25	FLAM3A	1.03	
0305	E	1,556 CFS PMF SPILLWAY (REPLACE W/ FLLA0304)		1556	CLF25	FLAM3A	1.03	
0306	E	30" RCP WITH 18" ORIFICE OUTLET	203	30	DIDB	FLAM3A	1.03	0.43
0308	E	62 AC-FT DESERT INN DETENTION BASIN		813	CLF25	FLAM3A	1.03	
0309	P0	UPGRADE TO 70 AC-FT DESERT INN DETENTION BASIN		813	CLF25	FLAM3A	1.03	
0322	E	81" RCP	1370	245	LF25	FLAM3A	0.27	0.50
0345	E	81" RCP	1340	245	LF25	FLAM3A	0.27	0.50
0369	E	72" RCP	670					0.50
0379	E	66" RCP	1320					0.50
FW15		**FREEWAY CHANNEL FROM DESERT INN TO EXPRESSWAY**						
0000	E	3: 12' X 10' RCB	2170	3685	CAL93	Boulder4	8.93	0.17
0010	E	3: 12' X 10' RCB	677	3506	CAL96	Boulder4	8.70	0.17
0038	E	3: 12' X 10' RCB	1945	3399	CCCH22	Boulder4	8.52	0.17
0050	E	3: 12' X 10' RCB	870	2613	CCH50	SW4	8.48	0.17
0089	E	2: 18' X 10' RCB	1200	2485	CCWAL2	SW4	8.28	0.20
0100	E	2: 18' X 10' RCB	1510	2324	COK11C	SW3	7.83	0.60
0125	E	2: 10' X 8' RCB	267	1450	DCCSA08	SW3	6.67	0.80
0130	E	20' X 8' RCB	1176	1450	DCCSA08	SW3	6.67	0.57
0150	E	2: 10' X 8' RCB	760	1450	DCCSA08	SW3	6.67	0.80
0175	E	2: 10' X 8' RCB	985	1450	DCCSA08	SW3	6.67	0.75
0214	P	2: 12' X 10' RCB	1610	4269	CED10-C	SW3	6.25	0.73
0242	P	2: 12' X 9' RCB	1500	4130	CCCPS08	SW3	6.03	0.93
0271	P	2: 12' X 10' RCB	1520	3842	CCPS08	SW3	5.49	0.59
0301	P	CONC CHNL 12'W 4'D 2:1 SS	1300	353	CCE3FD-C	SW3	0.42	0.42
FWCH		**WEST CHARLESTON DRAIN**						
0000	E	10' X 7' RCB	1710	1044	CCH22	SW3	1.38	0.74
0020	E	10' X 7' RCB	840	824	CCCH18-C	SW3	1.15	0.40
0036	E	9' X 7' RCB	425	824	CCCH18-C	SW3	1.15	0.40
0044	E	9' X 7' RCB	145	561	CCH18-C	SW3	0.53	0.40
0047	E	7' X 5' RCB	710	561	CCH18-C	SW3	0.53	2.05
0060	E	5' X 4' RCB	400	561	CCH18-C	SW3	0.53	0.40
FWOK		**OAKEY DRAIN**						
0000	E	10' X 8' RCB	1350	960	1COK11C	SW3	1.16	0.62
0020	E	10' X 8' RCB	1025	960	1COK11C	SW3	1.16	0.60
0040	E	8' X 8' RCB	960	749	COK10	SW3	0.85	1.00
0060	E	5' X 5' RCB	970	749	COK10	SW3	0.85	1.50
0076	E	5' X 6' RCB	1175	749	COK10	SW3	0.85	1.04
0100	E	5' X 5' RCB	2020	465	COK09-C	SW3	0.55	2.16
FWPS		**PALMYRA / SIRIUS DRAIN**						
0000	P	12' X 12' RCB	3000	3544	CPS08	SW3	5.07	1.50
0057	P	10' X 10' RCB	5220	2101	CPS06	SW3	2.78	1.28
0157	P	2: 66" RCP	5100	547	CPS03	SW3	0.59	1.15

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
FWR2		**FREEWAY CHANNEL - RAILROAD CHANNEL**						
0000	E	5' X 4' RCB	377					1.60
0020	E	EARTH CHNL 10'W 4'D 2:1 SS	650					0.50
FWRR		**FREEWAY CHANNEL BYPASS FACILITY RR BRANCH**						
0000	E	48" RCP	70					1.22
0010	E	CONC CHNL 5'W 5'D 0:1 SS	220					1.22
FWSA		**FREEWAY CHANNEL - SAHARA**						
0000	P	7' X 5' RCB	5700	496	CSA08	SW3	0.42	1.49
FWSH		**SHADOW LANE DRAIN**						
0000	E	7' X 4' RCB	950	247	CH22-C	SW3	0.23	0.20
FWUP		**FREEWAY CHANNEL BYPASS FACILITY**						
0000	E	10' X 9' RCB	350	181	CH50	SW3	0.20	0.37
0010	E	10' X 8' RCB	804	181	CH50	SW3	0.20	0.37
0059	E	10' X 6' RCB	2680	181	CH50	SW3	0.20	0.40
0100	E	8' X 4' RCB	1440	181	CH50	SW3	0.20	0.47
FWVV		**VALLEY VIEW DRAIN**						
0000	P	12' X 11' RCB	1320	1549	CCE3FA	SW3	2.69	0.30
0025	P	10' X 10' RCB	2665	1059	CR4C1	SW3	1.74	0.30
0050	P	8' X 6' RCB	7785	750	DFW05	SW3	1.34	1.50
FWWL		**FREEWAY CHANNEL-WALDMAN AVENUE**						
0000	E	6' X 6' RCB	820	431	CWAL2	SW3	0.45	0.20
LCCH		**LAS VEGAS CREEK CHANNEL**						
0000	E	2: 12' X 7' RCB	730	3212	CAL93C	MEADOWS4	9.90	1.28
0013	E	2: 12' X 6' RCB	2035	3050	CLC20-C	MEADOWS4	9.60	0.82
0051	E	2: 14' X 7' RCB	3113	3050	CLC20-C	MEADOWS4	9.60	0.60
0110	E	TRANSITION STRUCTURE	220	3001	CCLC16-C	MEADOWS4	9.50	
0114	E	2: 14' X 7' RCB	670	2386	CRMEDET	MEADOWS4	8.19	0.80
0127	E	TRANSITION STRUCTURE	110	2386	CRMEDET	MEADOWS4	8.19	
0129	E	2: 14' X 7' RCB	1130	2386	CRMEDET	MEADOWS4	8.19	0.50
0150	E	2: 13' X 7' RCB	200	2386	CRMEDET	MEADOWS4	8.19	0.95
0154	E	TRANSITION STRUCTURE	190	2386	CRMEDET	MEADOWS4	8.19	
0157	E	2: 12' X 6' RCB	1650	1700	CCLC14-C	SW3	2.93	1.06
0230	E	12' X 6' RCB	2140	1450	CLC14-C	SW3	2.53	1.74
0270	E	12' X 6' RCB	1705	814	CCWA02-C	SW3	1.84	0.54
0302	E	8' X 6' RCB	3940	814	CCWA02-C	SW3	1.84	2.49
0377	E	10' X 7' RCB	1226	814	CCWA02-C	SW3	1.84	0.74
0400	E	TRANSITION STRUCTURE	110	458	CWA02-C	SW3	1.47	0.49
0402	E	8' X 6' RCB @ JONES	535	458	CWA02-C	SW3	1.47	0.49
0412	E	60" RCP	1370	458	CWA02-C	SW3	1.47	1.08
0438	E	60" RCP	1090	171	CLC01-C	SW3	1.20	1.60
0458	E	60" RCP	1060	171	CLC01-C	SW3	1.20	1.60
0478	E	60" RCP	1110	171	CLC01-C	SW3	1.20	0.55
0499	E	42" RCP OUTLET	660	87	RAINBWDB	SW3	1.11	1.88
0513	E	102 AC-FT RAINBOW DETENTION BASIN		1027	RAINBWIN	SW3	1.11	
LCDE		**LAS VEGAS CREEK - DECATUR**						
0000	E	6' X 5' RCB	1800	430	LC11-C	SW3	0.38	1.26
0034	E	72" RCP	700	430	LC11-C	SW3	0.38	0.50
LCJO		**LAS VEGAS CREEK - JONES**						
0000	E	6' X 6' RCB	380	381	AL01B-C	SW3	0.37	0.50
0007	E	6' X 5' RCB	675	381	AL01B-C	SW3	0.37	0.62
LCLO		**LAS VEGAS CREEK - LORENZI**						
0000	E	7' X 6' RCB	445	285	DAL00A	SW3	0.41	3.37
0008	E	7' X 6' RCB	2983	285	DAL00A	SW3	0.41	0.40
0054	E	7' X 5' RCB	169	285	DAL00A	SW3	0.41	1.00
LCME		**LAS VEGAS CREEK - MEADOWS**						
0000	E	14' X 8' RCB	895	1484	MEADOWDB	SW3SC	5.67	0.72
0016	E	STILLING BASIN	140	1484	MEADOWDB	SW3SC	5.67	0.21
0017	E	3,300 CFS SPILLWAY (REPLACE W/ LCME0018)		3300	MEADOWDB	SW3SC	5.67	
0018	P	MODIFY SPILLWAY, RAISE HEIGHT BY 1' (REPLACES LCME0017)		3300	MEADOWDB	SW3SC	5.67	
0019	E	1: 11' X 5' RCB AND 1: 11.5' X 5' RCB	110	1484	MEADOWDB	SW3SC	5.67	0.81
0020	E	213 AC-FT MEADOWS DETENTION BASIN		4909	MEADOWIN	SW3SC	7.55	
0021	P	UPGRADE TO 249 AC-FT MEADOWS DETENTION BASIN		4909	MEADOWIN	SW3SC	7.55	

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
LCME		**LAS VEGAS CREEK - MEADOWS**						
0026	E	ENERGY DISSIPATOR	110	4909	MEADOWIN	SW3SC	5.67	2.94
0028	E	CONC CHNL 45'W 8.5'D 0:1 SS	922	4909	MEADOWIN	SW3SC	5.67	0.40
0040	E	CONC CHNL 40'W 9.5'D 0:1 SS	525	4819	CAL90-C	SW3SC	5.44	0.40
0070	E	CONC CHNL 18-30'W 7-9.5'D 0:1 SS	255	1956	CAL16	SW3	2.33	2.06
0076	E	FREE SPAN BRIDGE 18'W 8'D @ ALTA	100	1956	CAL16	SW3	2.33	1.89
0077	E	CONC CHNL 18'W 8'D 1:1 SS	618	1956	CAL16	SW3	2.33	1.89
0085	E	10' X 6' RCBC @ VALLEY VIEW	275	1712	1CAL16	SW3	2.09	1.89
LCRA		**LAS VEGAS CREEK - RANCHO**						
0000	E	12' X 8' RCB	380	931	CLC16-C	SW3	1.71	0.60
0004	E	12' X 6' RCB	2367	931	CLC16-C	SW3	1.71	0.77
LVWH		**WASHINGTON AVENUE CHANNEL**						
0447	E	3: 14.33' X 10' RCB	1955	5193	CCAL93	SW5	22.05	0.15
0484	E	CONFLUENCE STRUCTURE	455	5193	CCAL93	SW5	22.05	0.15
MEAL		**MEADOWS ALTA**						
0000	E	CONC CHNL 8'W 11'D 1:1 SS	700	1277	CAL13-3	SW3	1.48	1.58
0012	E	12' X 6' RCBC @ RED SKY	160	1227	CAL10-C	SW3	1.42	3.03
0013	E	CONC CHNL 8'W 11'D 1:1 SS	320	1227	CAL10-C	SW3	1.42	3.03
0015	E	72" RCP	2500	592^	CAL11-C^	SW3	1.38	1.94
0016	P	ADD: 84" RCP	2500	592^	CAL11-C^	SW4	1.38	1.94
0060	E	60" RCP	905	419^	CBR3^	SW3	1.08	1.00
0061	P	ADD: 78" RCP	905	419^	CBR3^	SW3	1.08	1.00
0100	E	72" RCP	1280	837	CBR3	SW3	1.08	1.40
0120	E	60" RCP	3500	385^	CAL05-C^	SW3	1.01	1.00
0121	P	ADD: 78" RCP	3500	385^	CAL05-C^	SW3	1.01	1.00
0130	E	6' X 4' RCB	1150	198	AL04-C	SW3	0.18	0.40
0150	E	60" RCP	285	518	CCUS	SW3	0.74	1.40
0160	E	36" RCP	2600	341	CUS	SW3	0.56	1.25
0209	E	48" RCP	2500	150	DCR2	SW3	0.41	1.70
0256	E	38" X 60" HERCP	81	150	DCR2	SW3	0.41	1.42
0258	E	48" RCP	275	150	DCR2	SW3	0.41	4.31
MECH		**EXTENSION OF MEADOWS / CHARLESTON**						
0108	E	30" RCP	8550	32	OAKEYDB	SW3	1.88	1.43
0310	E	24" RCP	1000	32	OAKEYDB	SW3	1.88	1.43
0323	E	15" RCP OUTLET	200	32	OAKEYDB	SW3	1.88	
0324	E	201 AC-FT OAKEY DETENTION BASIN		1891	OAKEYIN	SW3	1.88	
0334	E	11' X 6' RCB	200	622	C5-OAK-C	SW3	0.56	0.50
0337	E	9' X 6' RCB	520	622	C5-OAK-C	SW3	0.56	0.50
0338	E	10' X 8' RCB	2060	1302	C3A-OAKC	SW3	1.32	1.62
0351	E	90" RCP	1350	622	C5-OAK-C	SW3	0.56	0.50
0378	E	10' X 8' RCB	745	1302	C3A-OAKC	SW3	1.32	2.00
0380	E	66" RCP	385	372	3-HOLM-C	SW3	0.33	2.00
0390	E	83" X 53" RCP	50	372	3-HOLM-C	SW3	0.33	2.00
0410	E	66" RCP	182	372	3-HOLM-C	SW3	0.33	2.00
0420	E	66" RCP	1410	372	3-HOLM-C	SW3	0.33	2.00
MECN		**MEADOWS - CHARLESTON**						
0000	P	9' X 8' RCB	1570	1150	CCH10	SW3	1.00	1.09
0061	P	8' X 7' RCB	3300	1150	CCH10	SW3	1.00	1.82
0123	P	8' X 6' RCB	5200	854	CCH09-C	SW3	0.72	1.64
0223	P	6' X 5' RCB	2700	438	CCH05-C	SW3	0.34	2.04
MEOK		**OAKEY MEADOWS STORMDRAIN**						
0000	E	CONC CHNL 19'W 9.5'D 0:1 SS	112	2871	COK13	SW3SC	2.94	0.55
0002	E	19' X 7' RCB	800	2871	COK13	SW3SC	2.94	0.98
0017	E	19' X 8' RCB	1550	2871	COK13	SW3SC	2.94	0.92
0048	E	18' X 9' RCB	1700	2871	COK13	SW3SC	2.94	0.50
0070	E	7' X 6' RCB	1320	244	CH14B	SW3	0.22	0.44
0079	E	18' X 8' RCB	630	2524	COK12	SW3SC	2.57	0.50
0091	E	18' X 8' RCB	850	2524	COK12	SW3SC	2.57	1.01
0110	E	12' X 8' RCB	2304	1568	CCOK08	SW3SC	1.58	1.04
0150	E	12' X 8' RCB	642	1568	CCOK08	SW3SC	1.58	0.45
0166	E	12' X 9' RCB	1350	1568	COK08	SW3	1.58	0.45
0191	E	12' X 7' RCB	660	995	COK07	SW3	0.93	0.71

ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
MEOK		**OAKEY MEADOWS STORMDRAIN**						
0204	E	12' X 6' RCB	655	995	COK07	SW3	0.93	0.71
0217	E	12' X 5' RCB	1276	570	CSA06	SW3	0.52	0.40
MEPA		**MEADOWS PARALLEL**						
0000	E	10' X 6' RCB	1370	276	CCH14A	SW3	0.25	0.50
0022	E	6' X 5' RCB	200	276	CCH14A	SW3	0.25	1.45
0025	E	78" RCP	470	276	CCH14A	SW3	0.25	1.16
PSDE		**PALMYRA / SIRIUS DRAIN - DECATUR LATERAL**						
0000	P	12' X 9' RCB	1330	1127	CED02	SW3	1.21	0.38
0025	P	10' X 8' RCB	1320	652	CED13	SW3	0.65	0.25
WAGC		**WASHINGTON AVENUE CHANNEL - GRAND CENTRAL**						
0014	E	1: 12' X 4' RCB AND 1: 11' X 4' RCB	2440	505	LC21	SW3	0.56	0.20
0060	E	12' X 4' RCB	455	505	LC21	SW3	0.56	0.20

*The HEC-1 node shown identifies the controlling concentration point for the associated facility and is located upstream of this facility due to decreasing peak flow with increasing tributary area caused by storm distribution transitions, depth area reduction factors, or attenuation of flow from routing.
**As-built or design slopes were used when available. All other slopes are based on existing topography. The user should verify the facility slope listed prior to performing any facility specific analysis.
^ For parallel facilities, the existing facility flow equals its normal depth capacity, and the proposed parallel facility flow equals the remaining flow (i.e. HEC-1 Node flow = existing facility normal depth capacity + proposed parallel facility flow).

REGIONAL FLOOD CONTROL DISTRICT

2018 LAS VEGAS VALLEY FLOOD CONTROL MASTER PLAN UPDATE

FACILITY INVENTORY FIGURE F-29

LEGEND

ID (Facility Identifier) AABB
Parent Stream Name
Stream Name
Mile 0000
Distance Above Confluence with Parent Stream (Miles)
Miles in Hundredths

ExistingFacility..... E
Proposed or Modified Facility..... P
Contingency Level
Category A..... P
Catgory B..... P0

Bottom Width..... W
Depth..... D
Side Slope, H:V..... SS

Construction Features

Cast in Place Concrete Pipe	CIPCP	Reinforced Concrete Arch Culvert	RCAC
Corrugated Metal Arch Pipe Culvert	CMAP	Reinforced Concrete Box	RCB
Corrugated Metal Pipe Culvert	CMPC	Reinforced Concrete Box Culvert	RCBC
High Density Polyethylene	HDPE	Reinforced Concrete Pipe	RCP
Horizontal Elliptical Reinforced Concrete Pipe	HERCP	Reinforced Concrete Pipe Culvert	RCPC
Reinforced Concrete Arch Pipe	RCAP	Storm Sewer Pipe	SSP

ATKINS
Member of the SNC-Lavalin Group
Louis Berger

National Flood Hazard Layer FIRMette

Figure 3



Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 / 17.5 Cross Sections with 1% Annual Chance / Water Surface Elevation
- Coastal Transect
- 513 Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 3/13/2020 at 6:00:38 PM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.



FIGURE 4
EXISTING CONDITION DRAINAGE
MEADOWS MULTIFAMILY
LAS VEGAS, NV
JUNE 2020

Legend
- CollectionPoint
- Existing Watershed

0 25 50 100
Feet

NORTH

WOOD RODGERS

J:\2000-s\2997_TRU_Engineering\Meadows\GIS\Tasks\Figure 4 - Existing Conditions Drainage.mxd 6/8/2020 9:27:33 AM mberggren

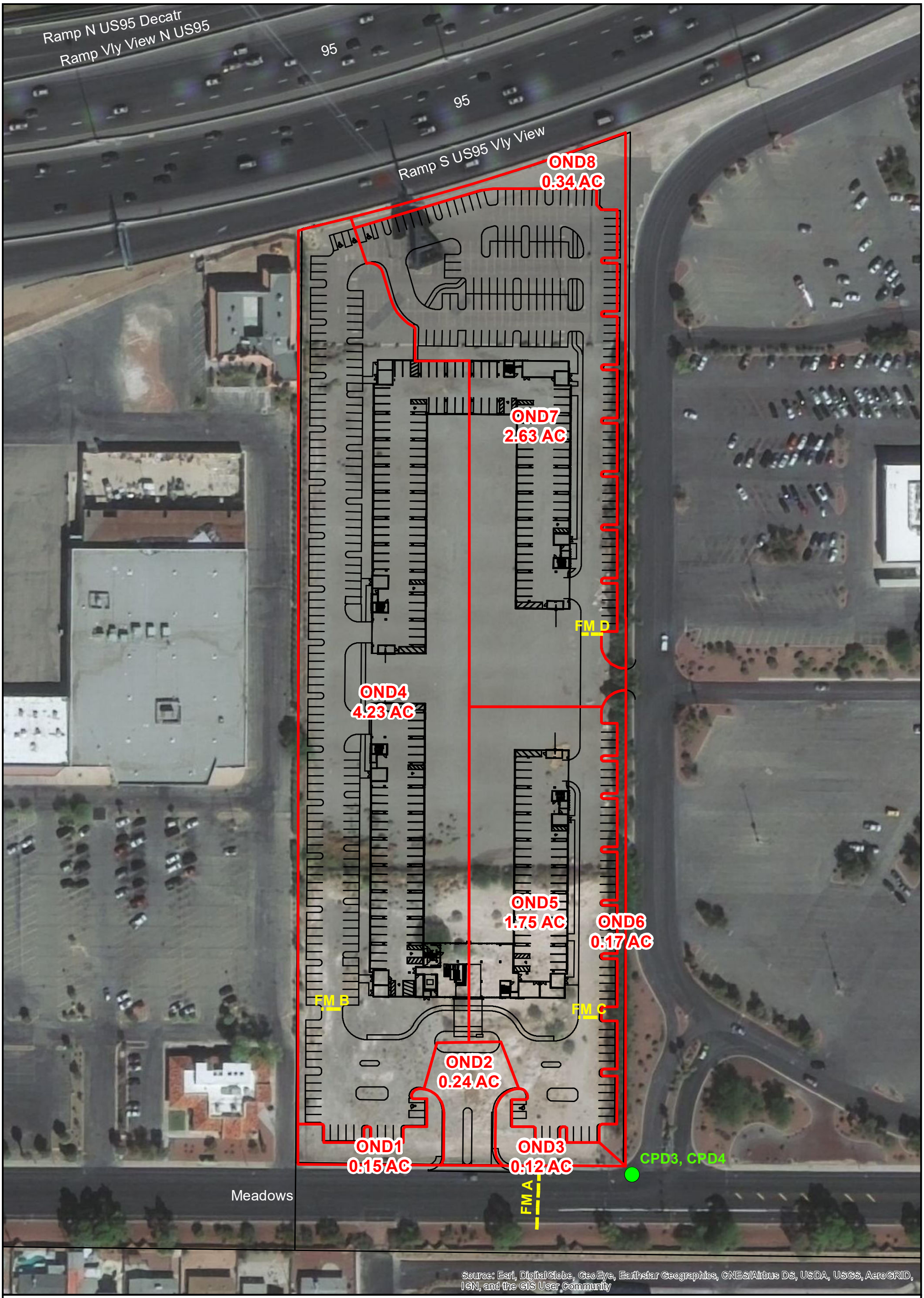


FIGURE 5
DEVELOPED CONDITION DRAINAGE
MEADOWS MULTIFAMILY
LAS VEGAS, NV
JUNE 2020

Legend
- CollectionPoint
- CrossSection
- Proposed Watershed

0 25 50 100
Feet

NORTH

WOOD RODGERS

J:\2000-s\2997_TRU_Engineering\Meadows\GIS\Tasks\Figure 5 - Developed Conditions Drainage.mxd 6/8/2020 9:28:01 AM mberggren

Ramp N US95 Decatr
Ramp Vly View N US95
95
95
Ramp S US95 Vly View
Area 5
1.04 ac
Area 1
0.42 ac
Area 2
1.64 ac
Area 4
0.23 ac
Area 3
0.71 ac
Meadows
Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community

FIGURE 6
BMP DRAINAGE AREAS
MEADOWS MULTIFAMILY
LAS VEGAS, NV
JUNE 2020

Legend
- Water Quality Swale
- Parking Lot with Treatment
- Parking Lot without Treatment

0 25 50 100
Feet

NORTH

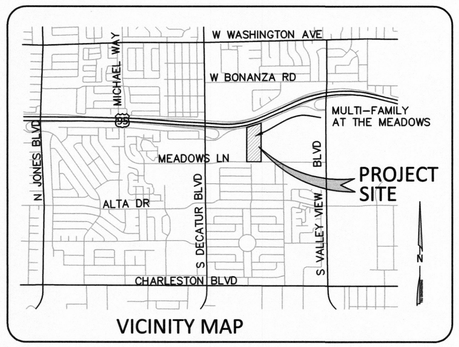
WOOD RODGERS

J:\2000-s\2997_TRU_Engineering\Meadows\GIS\Tasks\Figure 6 - BMP Basin Map.mxd 6/8/2020 9:27:45 AM mberggren

MULTI-FAMILY AT THE MEADOWS

IMPROVEMENT PLANS

APN: 139-31-111-010



VICINITY MAP

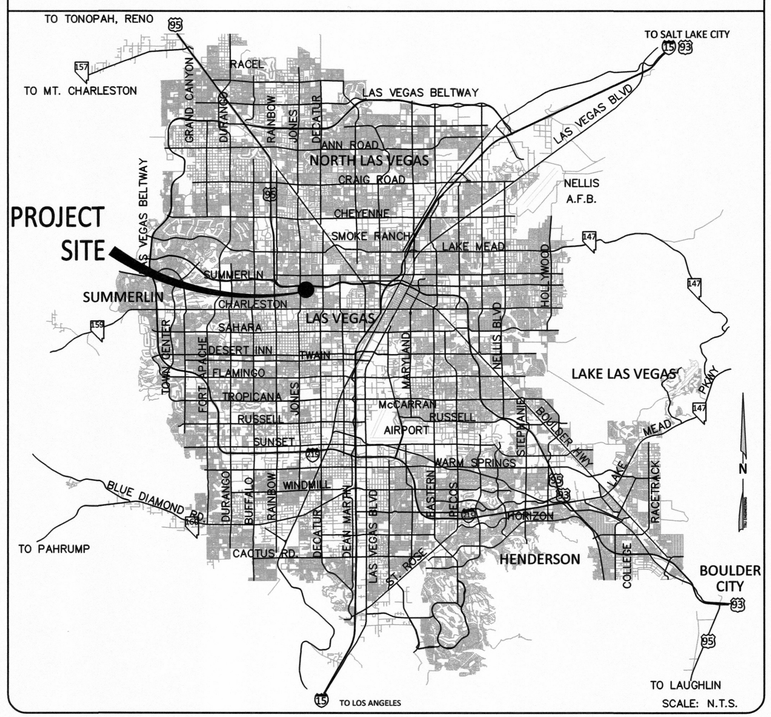
INDEX OF DRAWINGS

SHT.	NO.	SHEET TITLE
1	C1.01	COVER SHEET
2	C1.02	PROJECT DATA SHEET
3	C1.03	GENERAL NOTES SHEET
4	C3.01	HORIZONTAL CONTROL PLAN 1
5	C3.02	HORIZONTAL CONTROL PLAN 2
6	C3.03	LINE AND CURVE CURB TABLES
7	C4.01	GRADING PLAN 2
8	C4.02	GRADING PLAN 2
9	C5.01	ON-SITE SIGNAGE, STRIPING & FIRE LANE PLAN
10	C5.02	ON-SITE SIGNAGE, STRIPING & FIRE LANE PLAN
11	C6.01	UTILITY PLAN 1
12	C6.02	UTILITY PLAN 2
13	C6.03	UTILITY DETAILS
14	C8.01	DETAILS & SECTIONS 1
15	C8.02	DETAILS & SECTIONS 2

LEGAL DESCRIPTION

BEING PARCEL 1 LOT 2 AS SHOWN BY MAP THEREOF IN FILE 209, PAGE 24 OF SURVEYS IN THE CLARK COUNTY RECORDER'S OFFICE, CLARK COUNTY, NEVADA, LYING WITHIN THE NORTHEAST QUARTER (NE 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31 TOWNSHIP 20 SOUTH, RANGE 61 EAST, MOUNT DIABLO MERIDIAN, CITY OF LAS VEGAS, CLARK COUNTY, NV.

LOCATION MAP



ENGINEER

TRU Engineering

9555 HILLWOOD DR.
LAS VEGAS, NV. 89134
OFFICE: (702) 545-0355
FAX: (702) 545-0987
pf@trudevco.com

OWNER/DEVELOPER

Meadows Owner, LLC

c/o SILVERSTEIN PROPERTIES, Inc.
7 WORLD TRADE CENTER
250 GREENWICH STREET, 38th Floor
NEW YORK, NY. 10007
OFFICE: (702) 545-0355
FAX: (702) 545-0987

APPROVALS

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHTS-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 STANDARDS". THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN "DEVIATIONS FROM STANDARDS" IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA NEVADA.

CITY ENGINEER DATE

LAS VEGAS FIRE & RESCUE DATE

DIRECTOR, BUILDING AND SAFETY DATE

THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. 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 STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

CENTRAL TELEPHONE CO., DBA CENTURYLINK DATE

NV ENERGY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. 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.

NV ENERGY DATE

SOUTHWEST GAS CORP. DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

FOR ALL DRY UTILITY CROSSINGS:

- MAINTAIN MINIMUM 12" VERTICAL SEPERATION AT ALL PONTS OF CROSSING
- MAINTAIN MINIMUM 3' PARALLEL SEPERATION
- ANY EXCAVATION AT BACK OF CURB MUST REMAIN OPEN FOR INSPECTION OF COPPER SERVICE LATERALS. ANY COPPER SERVICE LATERAL KINKED, BENT OR OTHERWISE DAMAGED MUST BE REPLACED FROM THE MAIN TO THE ANGLE METER STOP.

DRAINAGE CERTIFICATION

I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY DS-XXXX ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

PAUL F. FRITZ P.E. 16825 DATE

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
OR
1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

BASIS OF BEARINGS

NORTH 89°18'55" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., SHOWN AS NORTH 89°41'09" WEST IN FILE 124, PAGE 59 OF PARCEL MAPS, ON FILE AT THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK

CCBM#		ELEVATION	DESCRIPTION
1LV0131 NWW6	SET	670.32 (M) 2199.22 (FT.)	CITY OF LAS VEGAS BENCHMARK 1LV0131NWW6 RIVET AND PLATE IN TOP OF CURB AT NORTHEAST CORNER OF DECATUR AND MEADOWS LANE ON SIGNAL POLE ISLAND.

BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88). PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUMS. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS IN CONJUNCTION WITH OLDER DRAWINGS.

No.	DESCRIPTION	DATE	INITIAL

PROFESSIONAL ENGINEER STATE OF NEVADA
PAUL F. FRITZ
EXP. 6-30-21
CIVIL
No. 16825

DATE: 06-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 06-22-20
PLOT TIME: 17:20:42

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
TRUDevCo.com

TRU Engineering

X:\Projects\19-007\Civil\DWG\Production\19-007c1.01 COVR.dwg
Paul Fritz

MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

COVER SHEET

DRAWING
C1.01
1 OF 15 SHTS

107v00000

CITY OF LAS VEGAS GRADING NOTES

1. IN THE EVENT THAT ANY UNFORESEEN CONDITIONS NOT COVERED BY THESE NOTES ARE ENCOUNTERED DURING GRADING OPERATIONS, THE OWNER/ENGINEER SHALL BE 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 WITHIN THE FOLLOWING HORIZONTAL AND VERTICAL TOLERANCES AND DEGREES OF COMPACTION, IN THE AREAS INDICATED:

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

COMPACTION TESTING WILL BE PERFORMED BY THE OWNER OR HIS REPRESENTATIVE. COMPACTION SHALL COMPLY WITH THE REQUIREMENTS OF THE ENGINEER.

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION 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 SOIL, 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, SUCH ITEM SHALL BE PROVIDED, AS DIRECTED BY THE CITY ENGINEER, AT NO EXPENSE TO THE CITY OF LAS VEGAS. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REVISED 4/15/10

STORMWATER RUNOFF MANAGEMENT

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 ACTIVITIES ASSOCIATED WITH THIS SITE DEVELOPMENT OR 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 ARE 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.

LEGEND

- PROPOSED UTILITIES
- EXISTING UTILITIES
- FUTURE UTILITIES
- SECTION LINE
- EASEMENT LINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- CENTERLINE
- PROPOSED UTILITY (BY OTHERS)
- PROPOSED SEWER LINE W/MH
- FUTURE SEWER LINE W/MH
- 16" SS — EXISTING SEWER LINE W/MH
- 4" W — EXISTING WATER LINE & GATE VALVE
- 12" PVC WTR — PROPOSED WATER LINE & GATE VALVE
- FUT WTR — FUTURE WATER LINE & GATE VALVE
- 2" G — EXISTING GAS LINE
- 2-6" E — EXISTING UNDERGROUND ELECTRICAL
- CATV — EXISTING CABLE TV
- TEL — EXISTING TELEPHONE
- OHP — EXISTING OVERHEAD POWER
- PROPOSED STORM DRAIN W/MH
- 6"x6" SD — EXISTING STORM DRAIN W/MH
- 8"x8" SD — FUTURE STORM DRAIN W/MH
- SIDEWALK — EXISTING SIDEWALK AND RAMP
- SIDEWALK — FUTURE SIDEWALK AND RAMP
- SIDEWALK — PROPOSED CURB, GUTTER AND SIDEWALK
- ROUGHT IRON FENCE
- NEW ABANDONED PIPE
- EXISTING ABANDONMENT
- SAWCUT
- STEEL CASING
- PAVEMENT RESTORATION
- TO BE ABANDONED (PROFILE)
- EDGE OF PAVEMENT / OUTSIDE EDGE
- LIMITS OF CONSTRUCTION
- FL — FILL LIMIT LINE
- WATERPROOFING
- PEDESTRIAN ACCESS EASEMENT

- 1 / CD1 — DRAWING NUMBER FOR DETAIL W/ REF. TO THE SHEET WHERE IT IS SHOWN
- BENCHMARK
- POTHOLE LOCATION
- EXISTING GATE VALVE
- FUTURE GATE VALVE
- PROPOSED WATER METER
- EXISTING TRAFFIC SIGNAL PULL BOX
- EXISTING TELEPHONE MANHOLE
- EXISTING POWER POLE
- FIRE HYDRANT
- EXISTING FIRE HYDRANT
- EXISTING UTILITY BOX
- EXISTING METER BOX
- EXISTING POLE
- 3005 — PROPOSED CONTOUR
- (3005) — EXISTING CONTOUR
- 60.50 TC — SPOT ELEVATION
- (60.50) TC — EXISTING SPOT ELEVATION
- 1.00% — ROAD SLOPE
- EXISTING STREET LIGHT (STLT)
- TOP SLOPE / TOE SLOPE — 3:1 SLOPE UNLESS NOTED OTHERWISE ON PLAN
- RETAINING WALL
- STORM DRAIN MANHOLE
- WATER STUB WITH BLOW-OFF
- FUTURE WATER STUB WITH BLOW-OFF
- SEWER STUB WITH CAP
- FUTURE SEWER STUB WITH CAP
- BUILDING SLAB STEP, FINISH FLOOR STEP
- LANDSCAPE ATRIUM DRAIN
- CATCH BASIN
- SEWER CLEANOUT

ABBREVIATIONS

A	AIR	FH	FIRE HYDRANT	PZ	PRESSURE ZONE
AASHTO	AMERICAN ASSOCIATION OF STATE HIGHWAY AND TRANSPORTATION OFFICIALS	FL	FLOW LINE / FIRE LANE	R, RAD	RADIAL, RADIUS
		FLG	FLANGE	RET	RETAINING
		FO	FIBER OPTIC	RT	RIGHT
AC	ASPHALT CONCRETE, ACRE	FRP	FIBERGLASS REINFORCED PLASTIC	RCB	REINFORCED CONCRETE BOX
ACP	ASBESTOS CEMENT PIPE	FS	FINISH SURFACE	RCP	REINFORCED CONCRETE PIPE
ADD'L	ADDITIONAL	FT	FOOT/FEET	RD	ROAD, ROOF DRAIN
AGG	AGGREGATE BASE	FTG	FOOTING	RDWY	ROADWAY
AP	ANGLE POINT	FUT	FUTURE	REC	RECTANGULAR
APN	ASSESSOR'S PARCEL NUMBER	G	GAS	REF	REFERENCE
APT	APARTMENT	GA	GAGE, GUY ANCHOR	REINF	REINFORCED
APPROX	APPROXIMATELY	GARG	GARAGE	REQD	REQUIRED
ASTM	AMERICAN SOCIETY FOR TESTING AND MATERIALS	GB	GRADE BREAK	RIM	TOP OF RIM ELEVATION
		GND	GROUND	RND	ROUND
AVE	AVENUE	GRD	GRADE, GROUND	ROW,R/W	RIGHT OF WAY
AVAR	AIR VALVE, AIR RELEASE ASSEMBLY	H, HGT	HEIGHT	RP	RADIUS POINT
		HDPE	HIGH DENSITY POLYETHYLENE	RPM	RAISED PAVEMENT MARKERS
AWWA	AMERICAN WATER WORKS ASSOCIATION	HDWL	HEADWALL	RR	FIRE RISER ROOM
		HERCP	HORIZONTAL ELLIPTICAL REINFORCED CONCRETE PIPE	RSGV	RESILIENT SEAT GATE VALVE
BC	BACK OF CURB			S	SEWER, SOUTH
BCR	BEGIN CURB RETURN	HGL	HYDRAULIC GRADE LINE	SCH	SCHEDULE
BLDG	BUILDING	HORIZ	HORIZONTAL	SD	STORM DRAIN
BLM	BUREAU OF LAND MANAGEMENT	HP	HIGH POINT, HIGH PRESSURE	SDCO	STORM DRAIN CLEANOUT
BLVD	BOULEVARD	HPS	HIGH PRESSURE SODIUM	SDMH	STORM DRAIN MANHOLE
BM	BENCHMARK	IBC	INTERNATIONAL BUILDING CODE	SECT	SECTION
BO	BLOW-OFF	INV	INVERT	SF	SQUARE FOOT/FEET
BVCE	BEGIN VERTICAL CURVE ELEVATION	INT	INTERIM	SHLDR	SHOULDER
BVCS	BEGIN VERTICAL CURVE STATION	JT	JOINT	SHT	SHEET
BW	BACK OF SIDEWALK	L	LENGTH	SL	STREET LIGHT
CL,℄	CENTERLINE	L, LT	LEFT	S.O.G.	SLAB ON GRADE
C&G	CURB AND GUTTER	LAT	LATERAL	SP	SERVICE POINT
CATV	UNDERGROUND CABLE TV	LF	LINEAR FEET	SQ	SQUARE
CCBM	CLARK COUNTY BENCH MARK	LIP	LIP OF GUTTER	SR	SEWER RECLAIM MAIN
CCPW	CLARK COUNTY PUBLIC WORKS	LN	LANE	SS	SANITARY SEWER
CCRFCD	CLARK COUNTY REGIONAL FLOOD CONTROL DISTRICT	LP	LIGHT POLE	SSMH	SANITARY SEWER MANHOLE
		LSCP LS	LANDSCAPE	STA	STATION
CCTV	CLOSED-CIRCUIT TELEVISION	LVVWD	LAS VEGAS VALLEY WATER DISTRICT	ST	STREET
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT	MAX	MAXIMUM	STD	STANDARD
		ME	MATCH EXISTING	STL	STEEL
CFS	CUBIC FEET PER SECOND	MH	MANHOLE	STLT	STREETLIGHT
CIP	CAPITAL IMPROVEMENTS PROJECT, CORRUGATED IRON PIPE	MIN	MINIMUM	STRUCT	STRUCTURE
		MLCP	MORTAR LINED AND COATED PIPE	SVZ	SIGHT VISIBILITY ZONE
CIPM	CURED-IN-PLACE MANHOLE	MOD	MODIFY/MODIFIED	SW	SIDEWALK
CIPP	CURED-IN-PLACE PIPE	MON	MONUMENT	SWG	SOUTHWEST GAS
CIR	CIRCLE	MPH	MILES PER HOUR	T	TELEPHONE OR TOP
CLR	CLEAR OR CLEARANCE	MSM	MINOR SUBDIVISION MAP	TAN	TANGENT
CLSM	CONTROLLED LOW STRENGTH MATERIAL	N	NORTH	TB	TOP OF BERM
		NAP	NOT A PART	TC	TOP OF CURB
CLV	CITY OF LAS VEGAS	NDOT	NEVADA DEPARTMENT OF TRANSPORTATION	TCD	TRAFFIC CONTROL DEVICE
CMP	CORRUGATED METAL PIPE			TCE	TEMPORARY CONSTRUCTION ESMT
CMU	CONCRETE MASONRY UNIT	NO	NUMBER	TEL,TELE	TELEPHONE
CNLV	CITY OF NORTH LAS VEGAS	NOSHA	STATE OF NEVADA OCCUPATIONAL SAFETY AND HEALTH ADMINISTRATION	TEMP	TEMPORARY
CO	CLEANOUT			TF	TOP OF FOOTING
CONC	CONCRETE			TG	TOP OF GRATE
COND	CONDUIT	NPC	NEVADA POWER COMPANY	TMH	TOP OF MANHOLE
CONST	CONSTRUCT OR CONSTRUCTION	NTS	NOT TO SCALE	TOP	TOP OF PIPE
COORD	COORDINATE	OC	ON CENTER	TP	TELEPHONE POLE
COR	CORNER	OHC	OVERHEAD COX COMMUNICATION	TRANS	TRANSITION
CPEP	CORRUGATED POLYETHELYNE PIPE	OHP	OVERHEAD POWER LINE	TRW	TOP OF RETAINING WALL
CPR	COPPER WATERLINE	P	POWER LINE	TS	TRAFFIC SIGNAL
CT	COURT	PB	PULL BOX	TSW	TOP OF SIDEWALK
CY	CUBIC YARD(S)	PBS	PLANTMIX BITUMINOUS SURFACE	TW	TOP OF WALL
Δ	DELTA	PC	POINT OF CURVE, PRESSURE CLASS	TYP,(TYP)	TYPICAL
DBL	DOUBLE			UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS (LATEST EDITION)
DCS	DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEM (LATEST EDITION)	PCC	POINT OF COMPOUND CURVE		
		PE	PROJECT ENGINEER, POLYETHYLENE OR PERMANENT EASEMENT		
		PED	PEDESTRIAN	UG	UNDERGROUND
DE	DRAINAGE EASEMENT	PERF	PERFORATED	UNO	UNLESS NOTED OTHERWISE
DEFL	DEFLECTION	PGL	PROFILE GRADE LINE	ULT	ULTIMATE
DIA, ø	DIAMETER	PH	POTHOLE	USDCCA	UNIFORM STD. DRAWINGS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS CLARK COUNTY AREA, NEVADA (LATEST EDITION)
DIP	DUCTILE IRON PIPE	PI	POINT OF INTERSECTION		
DIST	DISTANCE	PIP	PROTECT IN PLACE		
DOM	DOMESTIC	PIV	POST INDICATOR VALVE		
DR	DRIVE	℄	PROPERTY LINE		
DS	DOWNSPOUT	PLCP	POLYURETHANE LINED AND COATED STEEL PIPE	UT	UNDERGROUND TELEPHONE
DTL	DETAIL	PMF	PAVEMENT MARKING FILM	UTIL	UTILITY
DW	DRIVEWAY	PO	PUSH-ON	VAR	VARIABLE/VARIES
DWG	DRAWING	POB	POINT OF BEGINNING	VC	VERTICAL CURVE
E	EAST	POC	POINT ON CURVE	VCP	VITRIFIED CLAY PIPE
ECR	END CURB RETURN	P.O.C.	POINT OF CONNECTION	VERT	VERTICAL
ELE,ELEC	ELECTRICAL	POT	POINT ON TANGENT	VG	VALLEY GUTTER
ELEV	ELEVATION	PP	POWER POLE	VOL	VOLUME
EP, EOP	EDGE OF PAVEMENT	PROP	PROPOSED	W	WATER, WEST
ESMT	EASEMENT	PRC	POINT OF REVERSE CURVE	W/	WITH
EVC	END VERTICAL CURVE	PRVC	POINT OF REVERSE VERTICAL CURVE	WS	WATER SUPPLY
EXIST,EX	EXISTING			WT	WEIGHT
EXP	EXPANSION JOINT	PSI	POUNDS PER SQUARE INCH	WTR	WATER
FC	FACE OF CURB	PT	POINT OF TANGENCY	XING	CROSSING
FF FFE	FINISH FLOOR / FINISH FLOOR ELEVATION	P.U.E.	PUBLIC UTILITY EASEMENT	YD	YARD, YARD DRAIN
		PVC	POLYVINYL CHLORIDE	Z	PRESSURE ZONE
FG	FINISH GRADE	PVI	POINT OF VERTICAL INTERSECTION		
		PVMT	PAVEMENT		

QUANTITIES

SIZE	DESCRIPTION	PUBLIC	PRIVATE	QTY	UNIT
10"	PVC WATER	0	2,305	2,305	LF
6"	PVC WATER	0	178	178	LF
10"	GATE VALVE	0	2	2	EA
6"	GATE VALVE	0	6	6	EA
10"	10" TAPPING SLEEVE & VALVE	2	0	2	EA
6"	FIRE HYDRANT ASSEMBLY	0	6	6	EA
18"	RCP SD	0	52	52	LF
15'	DROP INLET	0	2	2	EA
	CONC. FLUME	0	2	2	EA
3'	CONC VALLEY GUTTER	0	1,678	1,678	LF
	COMMERCIAL DRIVEWAY	0	762	762	SF
6"	PVC (SDR-35) SANITARY SEWER	0	61	61	LF
8"	PVC (SDR-35) SANITARY SEWER	0	1,654	1,654	LF
48"	SANITARY SEWER MANHOLE	0	8	8	EA
3.5"	AC PAVEMENT	0	10,491	10,491	SY
2.5"	AC PAVEMENT	0	28,824	28,824	SY
	TYPE II AGG BASE	0	141,547	141,547	CY
	"L" TYPE CURB	0	415	415	LF
	"A" TYPE CURB	0	8,124	8,124	LF
	ADA RAMP	0	4	4	EA
4"	CONC. SIDEWALK	0	509	509	SF
	RETAINING WALL	0	82	82	SF

EARTHWORK QUANTITIES

VOLUME SUMMARY

AREA	CUT	FILL	NET
415,773 SF	6,726 CY	21,512 CY	14,786 CY

DOES NOT INCLUDE EXCAVATION FOR FOOTINGS OR UTILITY TRENCHING

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

Call before you Dig — Avoid cutting underground utility lines. It's easy. Call 811 OR 1-800-227-2600

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY. CALL BEFORE YOU DO OVERHEAD — 1-702-227-2929

FAST — Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

BASIS OF BEARINGS

NORTH 89°18'55" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., SHOWN AS NORTH 89°41'09" WEST IN FILE 124, PAGE 59 OF PARCEL MAPS, ON FILE AT THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK

CCBM#		ELEVATION	DESCRIPTION
1LV0131 NWW6	S E T	670.32 (M) 2199.22 (FT.)	CITY OF LAS VEGAS BENCHMARK 1LV0131NWW6 RIVET AND PLATE IN TOP OF CURB AT NORTHEAST CORNER OF DECATUR AND MEADOWS LANE ON SIGNAL POLE ISLAND.

BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88). PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUMS. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS IN CONJUNCTION WITH OLDER DRAWINGS.

No.	DATE	DESCRIPTION	DATE	INITIAL

PROFESSIONAL ENGINEER — STATE OF NEVADA — PAUL F. FRITZ — Exp. 06/30/2021 — CIVIL — No.16825

DATE: 06-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 06-22-20
PLOT TIME: 17:20:59

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
TRUDevCo.com

TRD Engineering

X:\Projects\19-007\Civil\DWG\Production\19-007c1.01 COVR.dwg
Paul Fritz

MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

PROJECT DATA SHEET

DRAWING
C1.02
2 OF 15 SHTS

107v00000

CITY OF LAS VEGAS TRAFFIC SIGNAL NOTES (LD)

1. ALL WORK PERFORMED ON ANY TRAFFIC SIGNAL COMPONENT MUST BE UNDER THE DIRECT ON-SITE SUPERVISION OF AN IMSA CERTIFIED TECHNICIAN. THE LEVEL OF CERTIFICATION REQUIRED SHALL BE LEVEL II.

2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ALL EXISTING UTILITIES, THE LOCATIONS OF UNDERGROUND UTILITIES AS SHOWN ON THE PLANS ARE APPROXIMATE ONLY. THE CONTRACTOR SHALL NOTIFY ALL UTILITY COMPANIES TO VERIFY IN THE FIELD THE LOCATIONS OF THEIR INSTALLATIONS 72 HOURS PRIOR TO CONSTRUCTION.

CALL-BEFORE-YOU-OVERHEAD	1-702-227-2929
CALL-BEFORE-YOU-DIG	1-800-227-2600
STREETLIGHTS	1-702-229-6331
F.A.S.T.	1-702-432-5300

3. ALL TRAFFIC SIGNAL INSTALLATIONS SHALL CONFORM TO THE UNIFORM STANDARD DRAWINGS SPECIFICATIONS AND SPECIAL PROVISIONS FOR PUBLIC WORKS' CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA, NEVADA, VOLUMES I AND II, ADOPTED BY THE REGIONAL TRANSPORTATION COMMISSION APRIL 8, 1992 WITH ALL SUBSEQUENT REVISIONS. BRACKET MOUNTED (SIDE-MOUNTED) VEHICLE SIGNAL ASSEMBLIES WITH 2 OR MORE SIGNAL HEADS SHALL HAVE AN ADDITIONAL ELBOW AS SHOWN IN UNIFORM STANDARD DRAWING NUMBER 863 AND SHOWN AS OPTION B IN UNIFORM STANDARD DRAWING NUMBER 844, AND SHALL HAVE A MENERALLAC SUPPORT AS SHOWN IN UNIFORM STANDARD DRAWING NUMBER 863 IF ONE OF THE SIGNAL HEADS CONTAINS 4 OR MORE SIGNAL MODULES.

4. SERVICE SHALL HAVE 1-60 AMP SINGLE POLE BREAKER FOR SIGNAL, AND ONE 40 AMP SINGLE POLE BREAKERS FOR STREET LIGHTS. SERVICE SHALL BE 200 AMP PADMOUNT.

5. LINE SIDE OF METER TO BE WIRED WITH THREE #3/0 AWG THW. LOAD SIDE SHALL BE WIRED WITH FOUR #4 AWG THW (2 BLACK, 2 WHITE) AND ONE #8 AWG THW (GREEN).

6. LUMINAIRES ON ALL SIGNAL POLES SHALL BE L.E.D. AS APPROVED BY THE CITY OF LAS VEGAS (CLV). DESIGN PROFESSIONAL AND CONTRACTOR SHALL VERIFY CITY'S LATEST LED FIXTURE SPECIFICATIONS AND APPROVED FIXTURES PER CLV WEBSITE, UNDER BUILDING AND SAFETY FORMS, PRIOR TO ORDERING MATERIALS. INTERSECTION LIGHTING SHALL MEET THE REQUIREMENTS OF UNIFORM STANDARD DRAWING NUMBER 300.S.3. EACH LUMINAIRE SHALL HAVE AN INDIVIDUAL 1000 WATT P.E. CONTROL. FOR LUMINAIRES THERE SHALL BE 2(TWO)-#4 AWG THW CONDUCTORS FROM THE SERVICE TO THE CABINET. IN THE CABINET, THE #4 AWG THW CONDUCTORS SHALL BRANCH OFF INTO #10 AWG THW CONDUCTORS INDIVIDUALLY FUSED WITH 10 AMP FUSES. THERE SHALL BE NO SPLICES BETWEEN THE CABINET AND LUMINAIRE FIXTURES.

7. THE INTERNALLY ILLUMINATED STREET NAME SIGNS SHALL BE WIRED TO THE LUMINAIRES PHOTO CELL FOR CONTROL WITH #10 AWG THW COPPER STRANDED WIRE (TYPICAL). THE SIGN SHALL BE WIRED TO THE LUMINAIRE DIRECTLY ABOVE IT. IN THE EVENT THERE IS NO LUMINAIRE ON THE TRAFFIC SIGNAL POLE, THE 1000 WATT P.E. CONTROL SHALL BE MOUNTED ON THE POLE CAP. ALL NEW ILLUMINATED STREET NAME SIGNS SHALL HAVE LIGHT EMITTING DIODE (LED) LAMPS PER SECTION 623 T.02.16 OF THE SPECIAL PROVISIONS.

8. CHECK CONDUIT AND CABLE SCHEDULE FOR CONDUIT, CABLE, AND WIRE SIZE. VERIFY ALL EXISTING CONDUIT RUNS.

9. ALL PULLBOXES SHALL BE IN ACCORDANCE WITH UNIFORM STANDARD DRAWINGS NO. 705, NO. 706, AND NO. 707.

10. TRAFFIC SIGNAL CABLE SHALL BE 15 OR 25 CONDUCTOR #14 AWG SOLID (TYPICAL) CABLE AND SHALL CONFORM TO IMSA SPEC. NO. 20-1.

11. PEDESTRIAN PUSH BUTTONS SHALL BE AUDIBLE TACTILE "POLARA INAVIGATOR" TYPE (2-WIRE PEDESTRIAN PUSHBUTTON SYSTEM WITH IN2 PUSH BUTTON STATIONS AND SHELF-MOUNT BIU CONTROL UNIT WITH SDLC CABLE) OR CAMPBELL COMPANY WIAPPS WIRELESS PEDESTRIAN PUSHBUTTON SYSTEM WITH APC IN ACCORDANCE WITH CITY OF LAS VEGAS SPECIAL PROVISIONS AND SECTION 623 OF THE CAL U.S.S. PUSH BUTTON SIGNS SHALL BE R10-3e PER MUTCD, 2009 EDITION, WITH FULL MOUNTING BRACKETS, AS MODIFIED BY THE MANUFACTURER TO FIT ON A 9'X12' SIGN, AND SHALL BE PORCELAIN-ENAMELED METAL. ALL PUSH BUTTONS TO BE MOUNTED 42" ABOVE SIDEWALK MAXIMUM HORIZONTAL REACH DISTANCE IS TO BE 10". SIDEWALK RAMPS WILL BE ACCORDING TO U.S.D. No. 235 (1-4) LATEST EDITION. WHEN AN EXISTING SIGNAL WITH EXISTING AUDIBLE-TAOILE PUSH BUTTONS IS MODIFIED, THE CONTRACTOR SHALL VERIFY NEW PEDESTRIAN PUSH BUTTONS OR CABINET EQUIPMENT MATCHES THE MANUFACTURE AND MODEL OF ANY EXISTING EQUIPMENT SCHEDULED TO REMAIN, TO PROVIDE A FULLY FUNCTIONING SYSTEM. THE CONTRACTOR SHALL PROVIDE AND INSTALL ALL CABINET EQUIPMENT, INCLUDING THE PEDESTRIAN PHASE ASSIGNMENT ON CONTROL UNIT, INTERFACE PANEL AND ANY REQUIRED HARNESSES, TO PROVIDE A FULLY FUNCTIONING SYSTEM.

12. THE ROUTING AND TERMINATION OF CONDUITS AND THE PLACING OF POLES AND CABINETS SHALL BE AS INDICATED ON THE PLANS. ALL CHANGES SHALL BE APPROVED BY THE ENGINEER.

13. MAST ARM R10-12 SIGNS TO BE ADJACENT (NO GAP) TO THE M-5 SIGNAL HEAD. WHERE FLASHING YELLOW ARROW LEFT TURN SIGNALS ARE USED, A MAST ARM R10-12F 'LEFT TURN YIELD ON FLASHING YELLOW ARROW'SIGN SHALL BE MOUNTED ADJACENT TO THE M-4 SIGNAL HEAD.

14. TRAFFIC SIGNAL CABINET SHALL BE A TYPE VIII CABINET UNLESS OTHERWISE SPECIFIED IN THE PLANS. THIS IS COMMONLY REFERRED TO AS AN "R" CABINET. THE CABINET SHALL CONFORM TO THE CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS AND THE CITY OF LAS VEGAS SPECIAL PROVISIONS. INSTALL CABINET NEAR THE R.O.W. LINE OR AS SHOWN ON THE DRAWINGS. THE TRAFFIC SIGNAL CONTROLLER CABINET, SHALL BE EQUIPPED WITH 16 LOAD BAY POSITIONS,SHALL BE A 48 DETECTOR CHANNEL CABINET AND SHALL INCLUDE TWO (2) RACK-MOUNTED, 12 SLOT, LOOP DETECTION RACKS, WITH 2 LOOP DETECTOR LOOP CHANNELS PER SLOT FULLY WIRED SO THAT ALL CHANNELS ARE USABLE AND 4 CHANNEL SLOTS THAT CAN ACCOMMODATE VIDEO DETECTION CARDS. THE CABINET SHALL CONTAIN A 764 OPTICOM PHASE SELECTOR IN A 760 RACK, WITH A 768 AUXILIARY INTERFACE PANEL MOUNTED IN THE CABINET AND FULLY WIRED FOR GREEN SENSE CAPABILITIES.

15. THE CONTRACTOR SHALL SUPPLY A MALFUNCTION MANAGEMENT UNIT (MMU) AND TRAFFIC SIGNAL CONTROLLER TO THE CITY OF LAS VEGAS TRAFFIC SIGNAL REPAIR SHOP A MINIMUM OF FOURTEEN DAYS PRIOR TO SIGNAL TURN-ON OR PRIOR TO CONVERTING TO A NEW PHASING SCHEME, FOR TIMING AND PROGRAMMING PURPOSES. THE CONTROLLER SHALL BE A NAZTEC 980 ATC TS2 TYPE 2 NTCIP COMPLIANT SIGNAL CONTROLLER WITH INTSTALLED AND LICENSED APOGEE CONTROLLER SOFTWARE, LATEST VERSION, AND THE MMU SHALL BE A MODEL MMU-1600SE AS MANUFACTURED BY RENO A&E, OR APPROVED EQUAL. THE CONTRACTOR SHALL DELIVER THE CONTROLLER AND MMU TO, AND PICKUP THE CONTROLLER AT 2985 RONEMUS DRIVE. CONTRACTOR SHALL NOTIFY THE TRAFFIC SIGNAL REPAIR SHOP (229-6076) SEVEN DAYS PRIOR TO PICK UP. THE CITY, AT ITS DISCRETION, MAY PROVIDE A DIFFERENT MODEL OF MMU OR CONTROLLER FOR INITIAL TURN-ON, IN WHICH CASE CITY PERSONNEL WILL SWAP THE CONTROLLER OR MMU AFTER THE PROJECT IS ACCEPTED.

16. CONTRACTOR SHALL POTHOLE SIGNAL POLE LOCATIONS PRIOR TO ORDERING OF POLES.

17. ALL MAST ARMS TO BE HOT-DIP GALVANIZED BY THE MANUFACTURER THE MAST ARM IS TO BE FABRICATED WITH END TENON ONLY. THE END TENON SHALL BE FACTORY INSTALLED AND THE REMAINING TENONS SHALL BE FABRICATED IN THE FIELD AT THE LOCATION SHOWN ON THE PLANS OR AS DIRECTED BY THE TRAFFIC ENGINEER AND/OR HIS AUTHORIZED REPRESENTATIVE. FOR TENON FABRICATION DETAILS SEE CLARK COUNTY AREA U.S.D. NO. 808 SHEET 2. ALL WELDING SHALL CONFORM TO AWS D 2.0, "SPECIFICATION FOR WELDED HIGHWAYS AND RAILWAY BRIDGES," AND TO ANY ADDITIONAL REQUIREMENTS OF SECTION 623 OF THE SPECIFICATIONS. ALL EXPOSED WELDS, SHALL BE PAINTED AS PROVIDED FOR REPAIRING DAMAGED GALVANIZED SURFACES.

18. ALL VEHICLE AND PEDESTRIAN SIGNAL INDICATIONS SHALL HAVE LIGHT EMITTING DIODE (LED) TYPE INDICATIONS, IN CONFORMANCE TO CITY OF LAS VEGAS SPECIAL PROVISIONS AND TO SECTRION 623.04 OF THE USSCOA. PEDESTRIAN FACES SHALL PROVIDE 'WALKING PERSON', 'HAND', AND 'COUNTDOWN'MESSAGES AS PROVIDED BY DURALIGHT MODEL #UXM-400-VEIL OR DIALIGHT MODEL #430-6479-001X, OR APPROVED EQUAL. THE 'COUNTDOWN'MESSAGE SHALL NOT FLASH. WHERE EXISTING SIGNALS ARE MODIFIED, THE CONTRACTOR SHALL VERIFY THAT LED PEDESTRIAN INDICATIONS FOR A SPECIFIC PHASE ARE OF THE SAME MANUFACTURE SO THAT THEY FUNCTION CORRECTLY, OR SHALL REPLACE ALL COUNTDOWN PEDESTRIAN INDICATIONS FOR THAT PHASE.

19. VIDEO DETECTION SYSTEMS SHALL BE TS2 COMPATIBLE AND SHALL INPUT DETECTOR CALLS TO THE CONTROLLER THROUGH AN SDLC CABLE. SYSTEMS WILL BE EITHER ITERIS EDGE 2-1IN PROCESSORS WITH VRACK5-PS, EDGE2-TS2-1M-PAK AND EDGECONNECT PAK, (IP ADDRESSABLE); PEEK VIDEOTRAK IQ (WITH ETHERNET PORT AND SDLC); OR TRAFICON VIP WITH VIEWCOM (IP ADDRESSABLE) AND PIM (SDLC). WHEN VIDEO DETECTION IS SPECIFIED ON THE TRAFFIC SIGNAL PLANS. ALL VIDEO DETECTION SYSTEMS WILL BE STAND ALONE SYSTEMS TO INCLUDE ALL NECESSARY EQUIPMENT TO PROGRAM THE VIDEO DETECTION SYSTEM. A PROGRAMMING "MOUSE", KEYPAD OR LAPTOP COMPUTER (IF REQUIRED FOR PROGRAMMING THE VIDEO DETECTION SYSTEM) AND APPROPRIATE SOFTWARE WILL BE SUPPLIED WITH EACH VIDEO SYSTEM. PERSONAL COMPUTERS (PCs) MAY NOT BE SUBSTITUTED FOR LAPTOPS. A VIDEO MONITOR (COLOR FLAT SCREEN) 9" TO 13" WILL BE SUPPLIED WITH EACH VIDEO DETECTION SYSTEM. EACH VIDEO CAMERA WILL HAVE POWER AND VIDEO CABLE DIRECTLY FROM THE CABINET. COAXIAL CABLE WILL BE TYPE 8281 (SOLID CENTER CONDUCTOR). CAMERAS THAT USE A PREFABRICATED CABLE INTEGRATING POWER AND COAXIAL CABLE INTO A SINGLE WEATHERPROOF CONNECTOR ARE ACCEPTABLE. "BNC" ARE THE ONLY ACCEPTABLE TERMINATION OF COAXIAL CABLES. CAMERAS WILL BE MOUNTED PER MANUFACTURER'S RECOMMENDATIONS AND PER CLV TRAFFIC ENGINEER APPROVAL. VIDEO CAMERAS SHALL BE COLOR AND SHALL BE MOUNTED ON A MINIMUM 6 FOOT RISER ON THE SIGNAL MAST ARM WITH EXTENSION BRACKETS (TYPE AG-0175-74-62 OR EQUIVALENT). THE LOCATION OF THE CAMERA ON THE MAST ARM SHALL BE APPROVED BY THE TEFO TRAFFIC SIGNAL SUPERVISOR. A VIDEO FILTER (CX06-BNYC OR EQUIVALENT) WILL BE INSTALLED IN THE SIGNAL CABINET FOR EACH CAMERA VIDEO INPUT. VIDEO DETECTION PROCESSORS AND COMMUNICATIONS CARDS SHALL BE PROVIDED WITH THE LATEST VERSIONS OF THE MANUFACTURER'S SOFTWARE. THE CONTRACTOR SHALL AIM CAMERAS AND PROGRAM AND CONFIGURE THE VIDEO DETECTION PROCESSORS TO PROVIDE A FULLY FUNCTIONING SYSTEM.

20. WHERE NEW LOOPS WILL BE OVERLAID WITH NEW PAVEMENT, LOOP DETECTORS SHALL BE PREFORMED LOOPS AS MANUFACTURED BY RENO A & E OR NEVER-FAIL LOOP SYSTEMS, AND ALL LOOPS SHALL BE INSTALLED IN THE ROADWAY PRIOR TO PLACEMENT OF THE FINAL PAVEMENT LIFT. WHERE NEW LOOPS ARE INSTALLED THAT ARE NOT OVERLAID WITH NEW PAVEMENT, LOOPS SHALL BE CABLE-IN-DUCT PER SECTION 623 T.02.04.C OF THE CITY OF LAS VEGAS SPECIAL PROVISIONS. LOOP LEAD-IN CABLE SHALL BE 6-PAIR 18 AWG MULTIPLE CONDUCTOR CABLE AS SPECIFIED IN SECTION 623T.02.04 OF THE CLV SPECIAL PROVISIONS. ALL WIRING HARNESSES, RACK POSITIONS, AND LOOP LEAD-IN CABLE SHALL BE CLEARLY MARKED AS TO THE APPROPRIATE PHASE AND LETTER DESIGNATION TO WHICH IT BELONGS AS SHOWN ON THE TRAFFIC SIGNAL PLANS. LOOPS SHALL BE LOCATED AS SHOWN ON THE TRAFFIC SIGNAL PLANS AND LOCATED BY THE CLV TRAFFIC ENGINEERING DIVISION PRIOR TO INSTALLATION. REFER TO SECTION 623T.02.04 OF THE CLV SPECIAL PROVISIONS FOR ADDITIONAL REQUIREMENTS.

21. OPTICAL PREEMPTION UNITS WILL BE GLOBAL TRAFFIC TECHNOLOGIES (ENCODING CAPABLE), MODEL 764 OPTICOM PHASE SELECTOR INSTALLED IN A MODEL 760 RACK WITH A MODEL 768 AUXILIARY INTERFACE PANEL (AIP) MOUNTED IN THE CABINET AND FULLY WIRED FOR GREEN SENSE CAPABILITIES. OPTICAL SENSORS WILL BE MODEL 721 WITH ONE DETECTOR PER DIRECTION, UNLESS SHOWN OTHERWISE IN THE PLANS, AND WILL BE INTERFACED TO THE TRAFFIC SIGNAL CONTROLLER CABINET WITH M-138 CABLE. THE SOUTHBOUND OPTICOM DETECTOR SHALL BE WIRED TO INPUT PREEMPTED ON CHANNEL 1 IN THE PHASE SELECTOR, EASTBOUND ON CHANNEL 2, NORTHBOUND ON CHANNEL 3, AND WESTBOUND ON CHANNEL 4, UNLESS VARIATIONS ARE APPROVED BY THE TRAFFIC SIGNAL SUPERVISOR. WHEN 764 PHASE SELECTORS ARE ADDED TO A CABINET WITHOUT A 768 AIP, THE CONTRACTOR SHALL INSTALL AND WIRE A NEW 768 AIP.

22. IF THE IMPROVEMENTS NECESSITATE THE OBLITERATION, TEMPORARY CONSTRUCTION, TEMPORARY REMOVAL, OR RELOCATION OF ANY EXISTING TRAFFIC PAVEMENT MARKING, SUCH PAVEMENT MARKING SHALL BE RESTORED OR REPLACED AT THE CONTRACTORS EXPENSE TO THE SATISFACTION OF THE CITY.

23. INTERCONNECT CABLE SHALL BE AS SHOWN IN THE WIRE SCHEDULE.

24. THE CONTRACTOR SHALL INSTALL CROSSWALKS, STOP BARS, STRIPING AND SIGNS AS IDENTIFIED ON THE PLANS.

25. WHERE THE PLANS CALL FOR REMOVAL AND SALVAGE OF EXISTING TRAFFIC SIGNAL EQUIPMENT, THE CONTRACTOR SHALL CALL 702-229-6331 TO SPEAK TO A TRAFFIC FIELD SUPERVISOR TO ARRANGE FOR DELIVERY TIMES AND LOCATIONS.

26. THE CONTRACTOR SHALL MAINTAIN EXISTING SIGNALS THROUGH THE LIFE OF THE PROJECT PER SECTION 623 G.03.01N OF THE CLV SPECIAL PROVISIONS.

REVISED SEPTEMBER 19, 2018

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 ADVANCED 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 "SUGGESTED 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 THE 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 UTILIZE TYPE XI RETROREFLECTIVE SHEETING IN ACCORDANCE WITH USSCCA 627 AND 716 AND SHALL HAVE AN ANTI-GRAFFITI PROTECTIVE OVERLAY FILM THAT IS A MATCHING COMPONENT TO, AND OF THE SAME MANUFACTURER AS THE RETROREFLECTIVE SHEETING TO WHICH IT IS APPLIED. STREET NAME 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 STANDARDS.

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 STREET LIGHT STANDARD AND THE SIGNPOST SHALL BE ELIMINATED.

8. ALL PERMANENT TRAFFIC CONTROL DEVICES CALLED FOR HEREON SHALL BE IN PLACE AND IN FUNCTIONING POSITION PRIOR TO ALLOWING 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 STOP 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 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 TO THE TRAVELING PUBLIC.

12. THE CONTRACTOR SHALL BE RESPONSIBLE FOR NOTIFYING REGIONAL TRANSPORTATION COMMISSION OF SOUTHERN NEVADA (RTC) 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 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.

REVISED JUNE 4,2018

FLOOD ZONE NOTE

NO PORTION OF THE PROJECT SITE FALLS WITHIN A FEMA DESIGNATED SPECIAL FLOOD HAZARD AREA. THE SITE IS LOCATED ON PANEL 32003C2145F, DATED NOVEMBER 16, 2011. THIS PANEL SHOWS THAT THE PROJECT IS LOCATED WITHIN ZONE X AND NOT LOCATED WITHIN A FEMA DESIGNATED 100-YEAR ZONE A OR SPECIAL FLOOD HAZARD AREA.

DEVIATION FROM STANDARD

NONE

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # 126XXX (Revised 08/01/2017)

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 # IDENTIFIED 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 OF 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 AND APPURTENANCES SHALL BE DISINFECTED, PRESSURE TESTED, AND HAVE AN ACCEPTABLE PASSING HEALTH WATER SAMPLE OBTAINED, PRIOR TO OPERATION AND USE.

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 APPROVED PRODUCT'S LIST FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS BY SUBMITTING SHOP DRAWINGS.

13. TELEPHONE 'CALL BEFORE YOU DIG'AT 811'OR 1-800-227-2600.

14. THE INSTALLATION OF 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 AN APPROPRIATELY SIZED ASPHALT REPAIR PATCH ON THE STREET SURFACE.

ANY DECORATIVE PAVING SURFACE WITHIN THE STREET IS THE 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 LVVWD WITH AN APPROPRIATELY SIZED PLAIN FINISH CONCRETE PATCH. THE LVVWD WILL NOT RESTORE, AND WILL NOT BE RESPONSIBLE FOR THE RESTORATION OF, ANY DECORATIVE PAVING SURFACE WITHIN THE STREET. THE LVVWD WILL NOT ATTEMPT TO MATCH COLOR OR FINISH OF ANY ADJACENT MATERIALS.

15. NO LEAD COMPLIANCE NOTE: TO COMPLY WITH THE FEDERAL SAFE DRINKING WATER ACT, ALL WATER WORKS BRASS PRODUCTS PROPOSED TO BE RELOCATED, OR INSTALLED AS NEW MUST BE INSTALLED WITH THE LEAD-FREE APPROVED PRODUCT. THE OLD LEADED PRODUCT MAY NOT BE USED.

APPROVED FOR CONSTRUCTION

_____
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVED DATE:_____

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 CONTENTS 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. STREETS 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") OR 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 INCH (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.

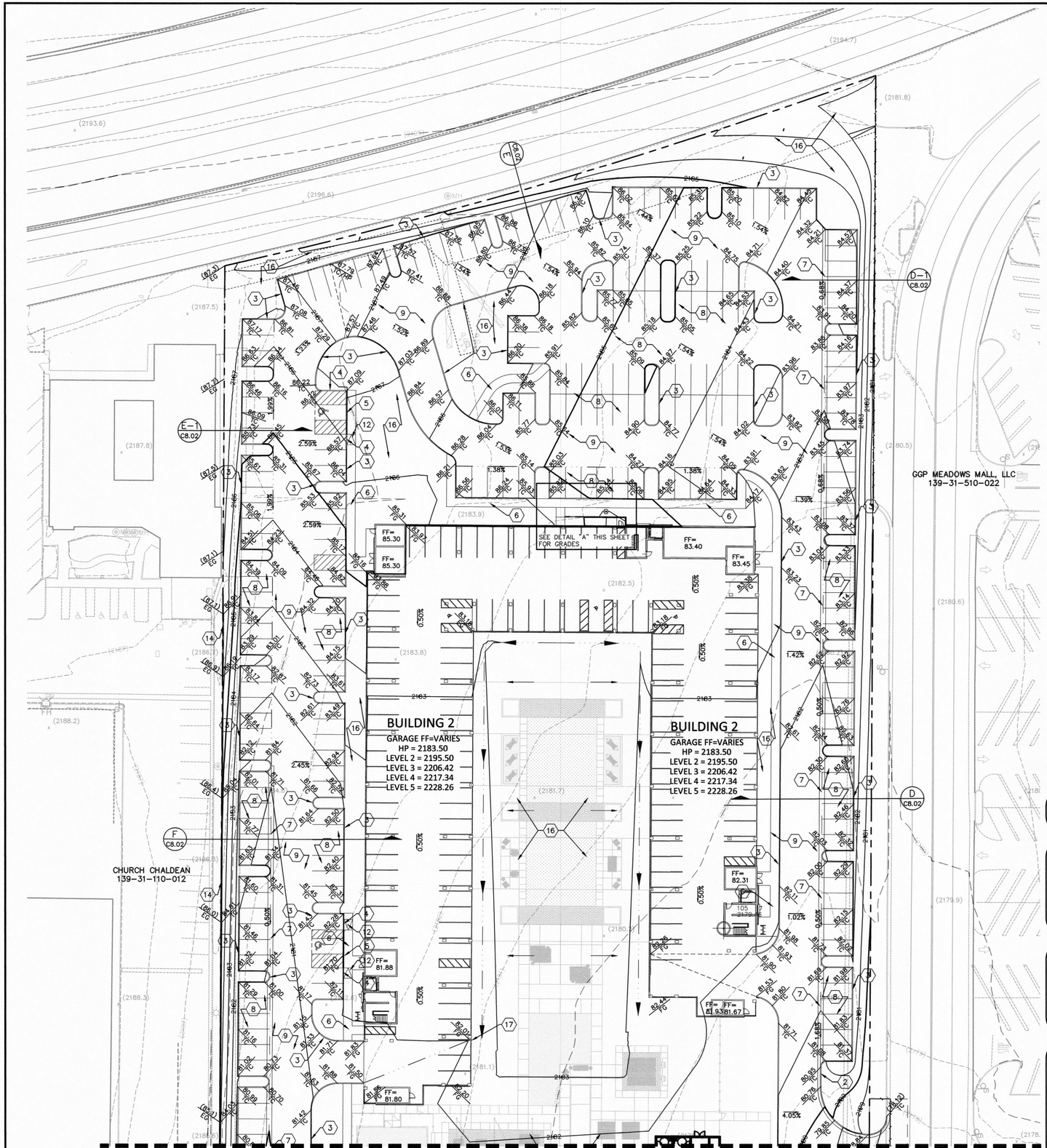
9. THE CITY OF LAS VEGAS WILL NOT ACCEPT ANY SEWER MAINS WHICH HAVE A VERTICAL DEFLECTION OF MORE THAN ONE TENTH (0.1) OF A FOOT FROM THE APPROVED CONSTRUCTION PLANS AT ANY LOCATION. SEWER MAINS FOUND TO EXCEED THIS TOLERANCE WILL HAVE TO BE REPAIRED OR REMOVED OR REPLACED TO THE SATISFACTION OF THE CITY ENGINEER PRIOR TO ACCEPTANCE BY THE CITY OF LAS VEGAS.

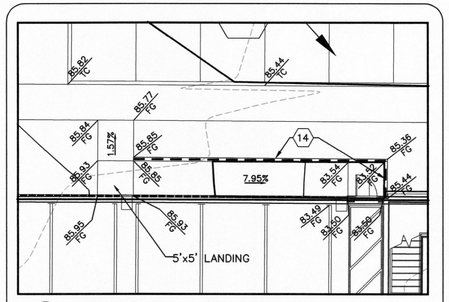
10. INSTALLATION OF CURVED SEWER REQUIRES THE USE OF C-900 PIPE WHICH ALLOWS FOR PIPE DEFLECTION AT THE JOINTS.

REVISED 04/15/10

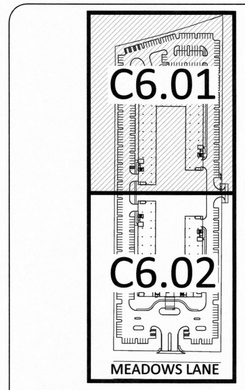
CITY OF LAS VEGAS STREETLIGHT NOTES

1. ALL ST





A PARKING ACCESS ADA RAMP
SCALE: 1" = 10'



KEY MAP

CONSTRUCTION NOTES

NO.	ITEM USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL COMMERCIAL DRIVEWAY PER USDCCA DWG NO. 222.1, 225 AND 228
2	INSTALL "L" CURB AND GUTTER PER USDCCA DWG NO. 216
3	INSTALL "A" TYPE CURB PER DETAIL "1" SHEET C8.01
4	INSTALL 6" TO 0" CURB TRANSITION. SEE DETAIL "2" SHEET C8.01
5	INSTALL 0"/FLUSH CURB PER DETAIL "3" SHEET C8.01
6	INSTALL 4" THICK CONCRETE SIDEWALK PER USDCCA DWG NO. 234. SEE PLANS FOR WIDTH
7	INSTALL 3' WIDE CONCRETE VALLEY GUTTER PER DETAIL "4" SHEET C8.01
8	INSTALL 2.5" AC OVER 4" TYPE II AGG. BASE PAVEMENT SECTION (AUTO PARKING) PER DETAIL "5" SHEET C8.01 AND GEOTECHNICAL REPORT
9	INSTALL 3.5" AC OVER 7" TYPE II AGG. BASE PAVEMENT SECTION (TRUCK ACCESS) PER DETAIL "5" SHEET C8.01 AND GEOTECHNICAL REPORT
10	INSTALL SIDEWALK RAMP CASE I ("A", "B" PER PLAN AS MEASURED FROM BACK OF WALK) PER USDCCA DWG. NO. 235
11	SAWCUT LINE TO A SMOOTH EDGE AND FEATHER IN TO MATCH EXISTING ASPHALT GRADE PER USDCCA DWG. NO. 500.4 & 500.5 & 503
12	INSTALL SIDEWALK RAMP. SLOPE NOT TO EXCEED 1:12
13	TRASH ENCLOSURE SEE ARCHITECTURAL PLANS FOR DETAILS
14	INSTALL CMU BLOCK RETAINING WALL SEE SITE STRUCTURAL PLANS FOR DETAILS
15	INSTALL CONCRETE FLUME PER DETAIL "6" SHEET C8.01
16	LANDSCAPE AREA. SEE LANDSCAPE PLANS FOR DETAILED DESIGN AND ADDITIONAL GRADING
17	PROVIDE 2'x1' OPENING IN GARAGE WALL FOR DRAINAGE
18	INSTALL MOD. TYPE "C" DROP INLET PER USDCCA DWG. NO. 412.1 SEE DRAWING FOR "L" AND "D"
19	INSTALL 18" HDPE SD PIPE PER UDACS PLATE NO. 16
20	CONNECT TO EXISTING 24" RCP PER DETAIL 7 SHEET C8.01
21	INSTALL 2-FOOT WIDE RIP-RAP d50=4", T=8"
22	INSTALL SIDEWALK DRAIN PER USDCCA DWG. 236
23	INSTALL 1' CURB CUT PER DETAIL 7 SHEET C8.01

N
TRU ENGINEERING SCALE: 1"=30'

20' 0 20' 40'
SCALE
SCALE: 1"=30'
FEET

ELEVATION NOTE
ADD 2100' TO ALL GRADE TAG ELEVATIONS.

FLOOD ZONE NOTE
THE SITE IS LOCATED ON FEDERAL EMERGENCY AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) CONTAINING COMMUNITY PANEL 32003C 2165D, DATED NOVEMBER 16, 2011. THIS PANEL SHOWS THAT THE PROJECT IS NOT LOCATED WITHIN ZONE A. THE SITE IS WITHIN ZONE X AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

DRAINAGE CERTIFICATION
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, DS1000

PAUL F. FRITZ, PE NO. 16825 DATE

GEOTECHNICAL REPORT
ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "GEOTECHNICAL EXPLORATION REPORT THE APEX AT MEADOWS"
- PROJECT NO.: G-20-039, DATED APRIL 8, 2020

PREPARED BY: NOVA GEOTECHNICAL & INSPECTION SERVICES
4480 WEST HACIENDA AVE., SUITE 104
LAS VEGAS, NV 89118
PHONE NO. (702) 873-3478
FAX NO. (702) 873-2199

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1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

BASIS OF BEARINGS
NORTH 89°18'55" WEST, BEING THE BEARING OF THE SOUTH LINE OF THE NORTH HALF (N 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 31, TOWNSHIP 20 SOUTH, RANGE 61 EAST, M.D.M., SHOWN AS NORTH 89°41'09" WEST IN FILE 124, PAGE 59 OF PARCEL MAPS, ON FILE AT THE CLARK COUNTY, NEVADA, RECORDER'S OFFICE.

BENCHMARK

CCBM#		ELEVATION	DESCRIPTION
1LV0131 NWW6	SET	670.32 (M) 2199.22 (FT.)	CITY OF LAS VEGAS BENCHMARK 1LV0131NWW6 RIVET AND PLATE IN TOP OF CURB AT NORTHEAST CORNER OF DECATUR AND MEADOWS LANE ON SIGNAL POLE ISLAND.

BASED ON NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD'88). PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUMS. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS IN CONJUNCTION WITH OLDER DRAWINGS.

No.	DATE	DESCRIPTION	DATE	INITIAL

PAUL F. FRITZ EXP 6/21 CIVIL No.16825 PROFESSIONAL ENGINEER STATE OF NEVADA

DATE: 06-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 06-22-20
PLOT TIME: 17:22:24

9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
TRUDevCo.com

TRU Engineering

X:\Projects\19-007\Civil\DWG\Production\19-007c4.00 GRAD.dwg
Paul Fritz

MEADOWS OWNERS, LLC

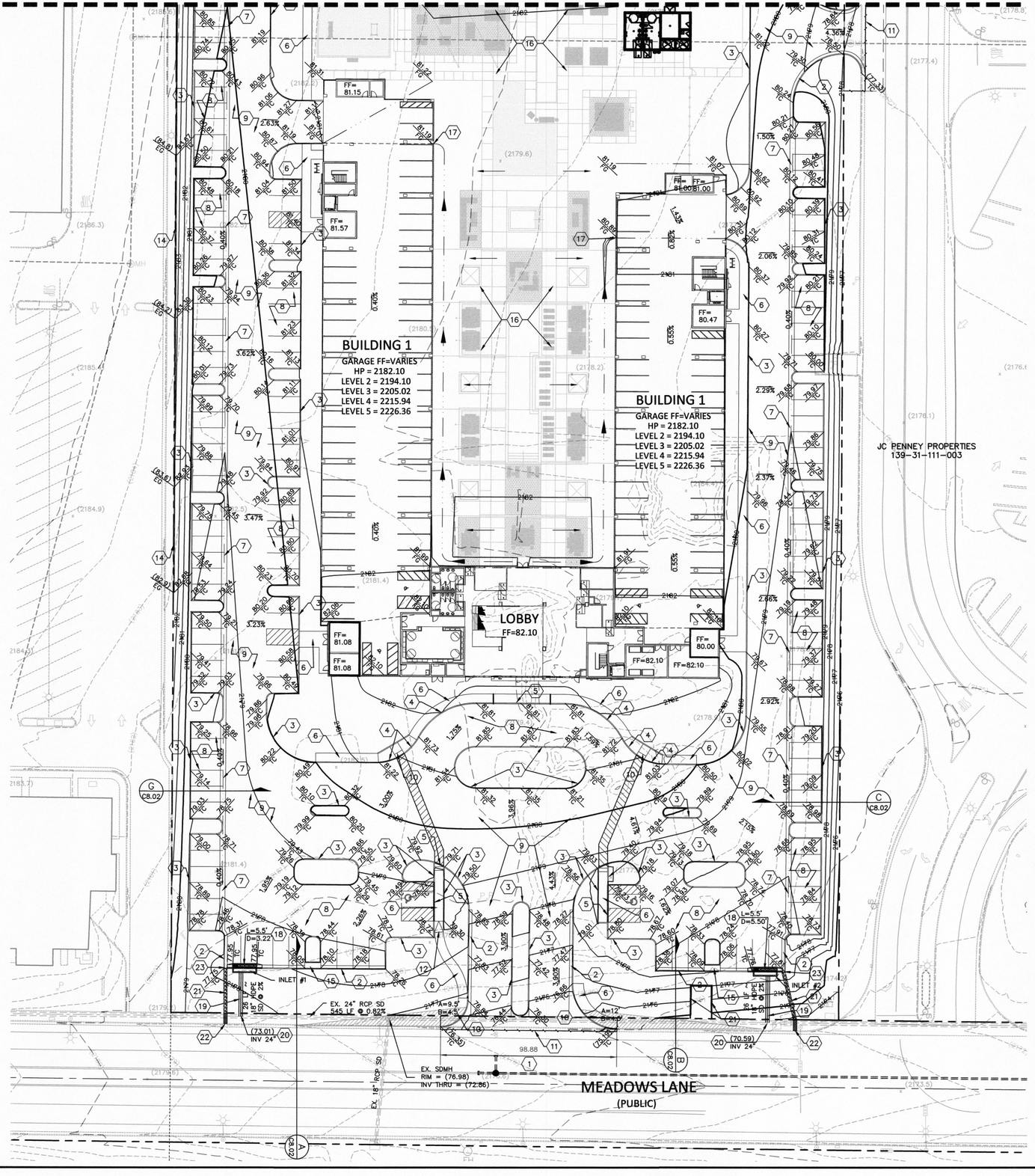
MULTIFAMILY AT THE MEADOWS

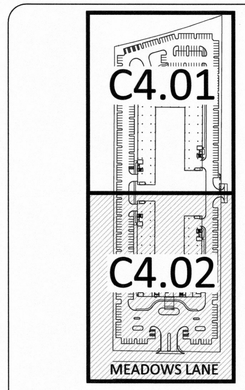
GRADING PLAN 1

DRAWING
C4.01
7 OF 15 SHTS

107v00000

MATCHLINE SEE SHEET C4.01 FOR CONTINUATION





KEY MAP

CONSTRUCTION NOTES

NO.	ITEM
1	USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
2	INSTALL COMMERCIAL DRIVEWAY PER USDCCA DWG NO. 222.1, 225 AND 228
3	INSTALL "L" CURB AND GUTTER PER USDCCA DWG NO. 216
4	INSTALL "A" TYPE CURB PER DETAIL "1" SHEET C8.01
5	INSTALL 6" TO 0" CURB TRANSITION. SEE DETAIL "2" SHEET C8.01
6	INSTALL 0"/FLUSH CURB PER DETAIL "3" SHEET C8.01
7	INSTALL 4" THICK CONCRETE SIDEWALK PER USDCCA DWG NO. 234. SEE PLANS FOR WIDTH
8	INSTALL 3' WDE CONCRETE VALLEY GUTTER PER DETAIL "4" SHEET C8.01
9	INSTALL 2.5" AC OVER 4" TYPE II AGG. BASE PAVEMENT SECTION (AUTO PARKING) PER DETAIL "5" SHEET C8.01 AND GEOTECHNICAL REPORT
10	INSTALL 3.5" AC OVER 7" TYPE II AGG. BASE PAVEMENT SECTION (TRUCK ACCESS) PER DETAIL "5" SHEET C8.01 AND GEOTECHNICAL REPORT
11	INSTALL SIDEWALK RAMP CASE I ("A", "B" PER PLAN AS MEASURED FROM BACK OF WALK) PER USDCCA DWG. NO. 235
12	SAWCUT LINE TO A SMOOTH EDGE AND FEATHER IN TO MATCH EXISTING ASPHALT GRADE PER USDCCA DWG. NO. 500.4 & 500.5 & 503
13	INSTALL SIDEWALK RAMP. SLOPE NOT TO EXCEED 1:12
14	TRASH ENCLOSURE SEE ARCHITECTURAL PLANS FOR DETAILS
15	INSTALL CMU BLOCK RETAINING WALL SEE SITE STRUCTURAL PLANS FOR DETAILS
16	INSTALL CONCRETE FLUME PER DETAIL "6" SHEET C8.01
17	LANDSCAPE AREA. SEE LANDSCAPE PLANS FOR DETAILED DESIGN AND ADDITIONAL GRADING
18	PROVIDE 2'X1' OPENING IN GARAGE WALL FOR DRAINAGE
19	INSTALL MOD. TYPE "C" DROP INLET PER USDCCA DWG. NO. 412.1 SEE DRAWING FOR "L" AND "D"
20	INSTALL 18" HDPE SD PIPE PER UDACS PLATE NO. 16
21	CONNECT TO EXISTING 24" RCP PER DETAIL 7 SHEET C8.01
22	INSTALL 2-FOOT WIDE RIP-RAP d50=4", T=8"
23	INSTALL SIDEWALK DRAIN PER USDCCA DWG. 236
	INSTALL 1' CURB CUT PER DETAIL 7 SHEET C8.01

ELEVATION NOTE

ADD 2100' TO ALL GRADE TAG ELEVATIONS.

SCALE: 1"=30'

FLOOD ZONE NOTE

THE SITE IS LOCATED ON FEDERAL EMERGENCY AGENCY (FEMA) FLOOD INSURANCE RATE MAP (FIRM) CONTAINING COMMUNITY PANEL 32003C 2165D, DATED NOVEMBER 16, 2011. THIS PANEL SHOWS THAT THE PROJECT IS NOT LOCATED WITHIN ZONE A. THE SITE IS WITHIN ZONE X AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN.

DRAINAGE CERTIFICATION

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, DS1000

PAUL F. FRITZ, PE NO. 16825 — DATE

GEOTECHNICAL REPORT

ALL GRADING WORK SHALL BE IN STRICT ACCORDANCE WITH THE SOILS REPORT FOR THE SITE ENTITLED "GEOTECHNICAL EXPLORATION REPORT THE APEX AT MEADOWS"
- PROJECT NO.: G-20-039, DATED APRIL 8, 2020

PREPARED BY: NOVA GEOTECHNICAL & INSPECTION SERVICES
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BASIS OF BEARINGS

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NO.	DATE	DESCRIPTION	INITIAL

PROFESSIONAL ENGINEER - STATE OF NEVADA
PAUL F. FRITZ
EXP. 6-30-21
CIVIL
No. 16825
DATE: 06-22-20

PROJECT NO.
DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 06-22-20
PLOT TIME: 17:22:40

TRU Engineering
9555 HILLWOOD DRIVE, STE.110
LAS VEGAS, NV 89134
T: 702.545.0355
F: 702.545.0987
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Paul Fritz

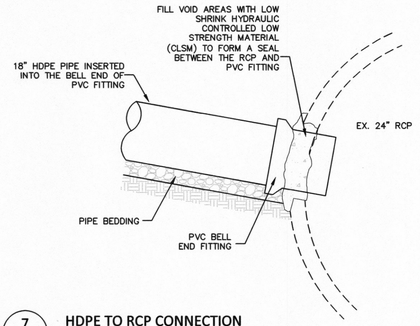
MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

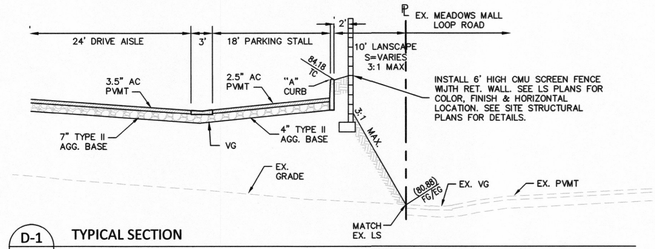
GRADING PLAN 2

DRAWING
C4.02
8 OF 15 SHTS

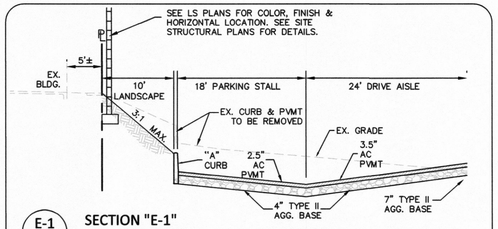
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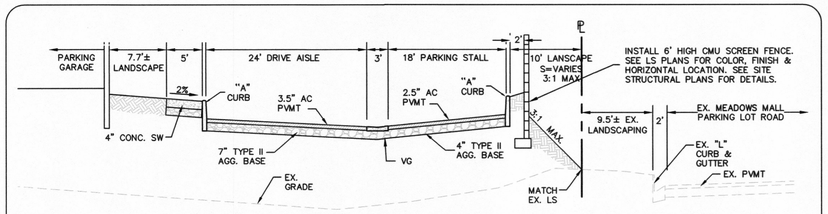
7 C4.02 **HDPE TO RCP CONNECTION**
NOT TO SCALE



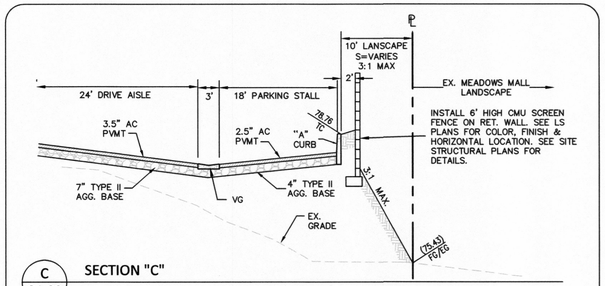
D-1 C4.01 **TYPICAL SECTION**
NOT TO SCALE



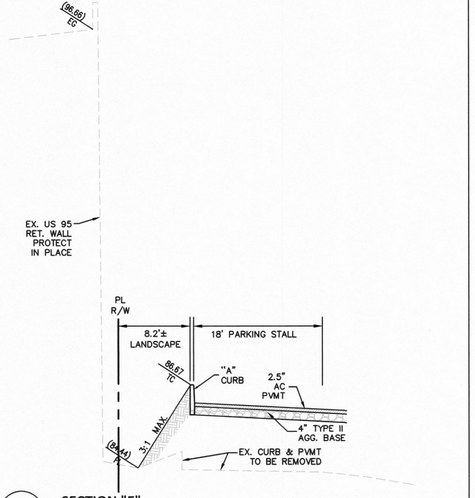
E-1 C4.01 **SECTION "E-1"**
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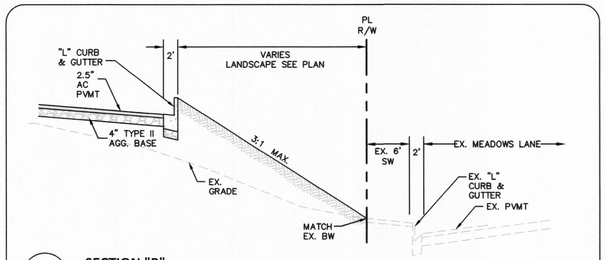
D C4.01 **SECTION "D"**
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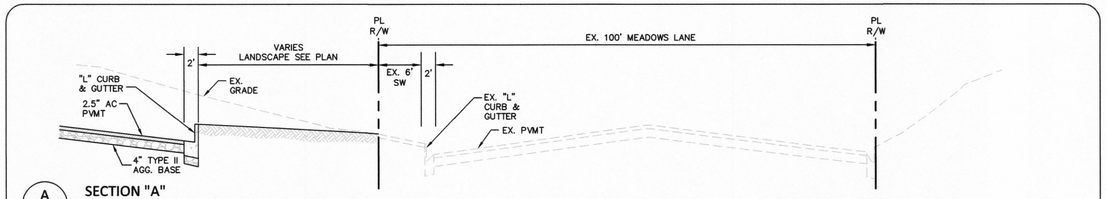
C C4.02 **SECTION "C"**
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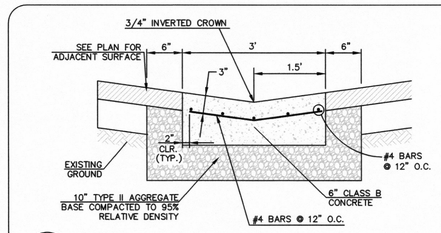
E C4.01 **SECTION "E"**
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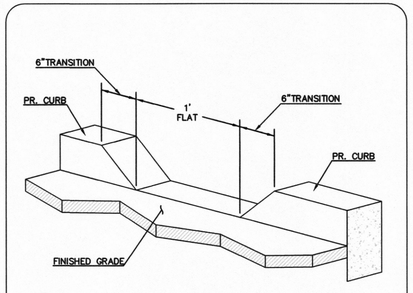
B C4.02 **SECTION "B"**
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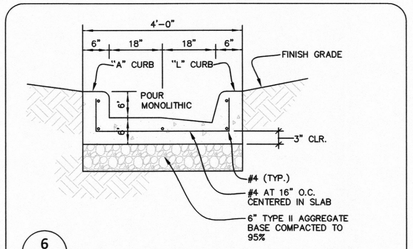
A C4.02 **SECTION "A"**
NOT TO SCALE



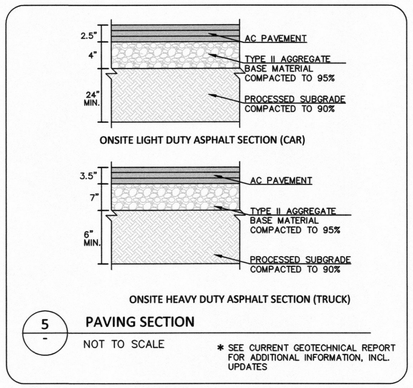
4 - **3' CONCRETE VALLEY GUTTER**
NOT TO SCALE



7 C4.02 **1' CURB OPENING**
NOT TO SCALE

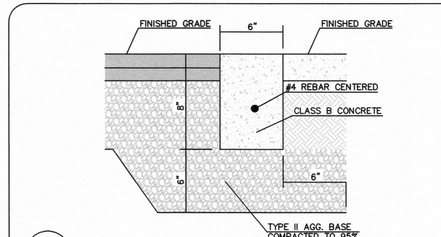


6 C4.02 **CONCRETE FLUME**
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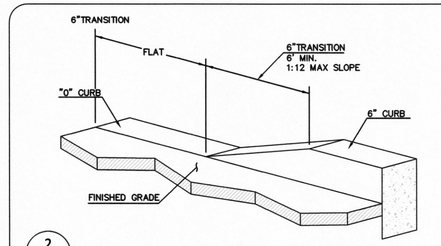


5 - **PAVING SECTION**
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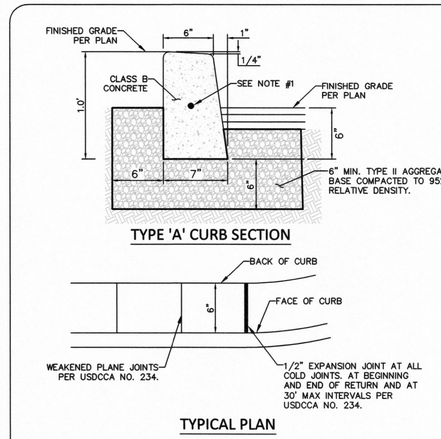
* SEE CURRENT GEOTECHNICAL REPORT FOR ADDITIONAL INFORMATION, INCL. UPDATES



3 - **0" FLUSH CURB (MOW CURB)**
NOT TO SCALE



2 - **6" CURB TO 0" CURB TRANSITION**
NOT TO SCALE



1 - NOTES:
1. CONTINUOUS #4 REBAR IN RADIUS OF CURB ONLY.

TYPE 'A' CURB (ONSITE)
NOT TO SCALE

No.	DATE	DESCRIPTION	DATE	INITIAL

PAUL F. FRITZ Exp. 06/30/2021 CIVIL No.16825 PROFESSIONAL ENGINEER STATE OF NEVADA

DATE: 06-22-20

PROJECT NO.

DESIGN: PFF
DRAWN: PFF
CHECK: PFF
PLOT DATE: 06-22-20
PLOT TIME: 17:39:56

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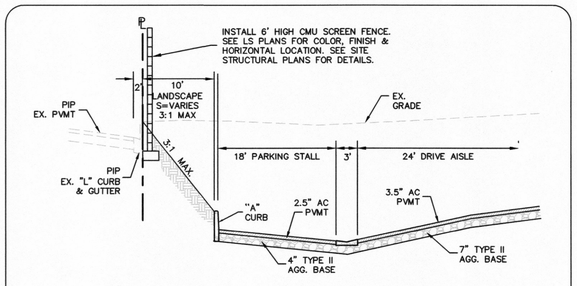
MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

DETAILS & SECTIONS 1

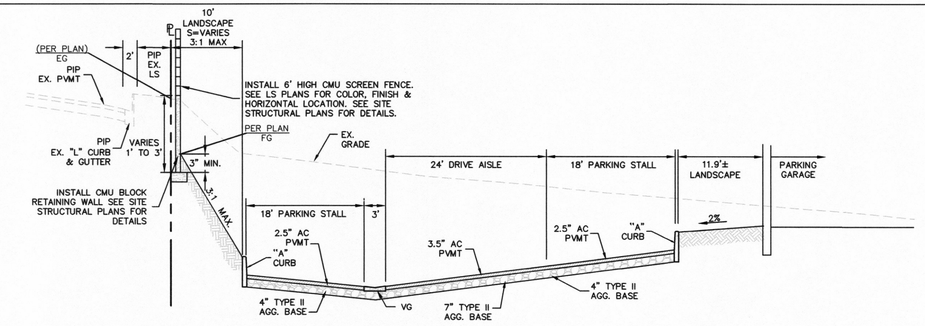
DRAWING
C8.01
14 OF 15 SHTS

107v00000



G C4.01 **TYPICAL SECTION**

NOT TO SCALE



F C4.02 **TYPICAL SECTION**

NOT TO SCALE

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MEADOWS OWNERS, LLC

MULTIFAMILY AT THE MEADOWS

DETAILS & SECTIONS 2

DRAWING
C8.02
OF 15 SHTS

107v00000