DS #: 5302

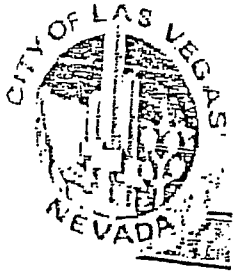
APN: 126-26-000-003

PROJECT: BLM 270 Parcel E Mass Grade

SUBMITTAL: 1st

SCANNED BY/DATE:

CHECKED BY/DATE:



CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: August 13, 2020
TO: **Land Development Services** Department of Building & Safety				FROM: Jennifer Shinn, P.E. Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for:			**COPIES TO:**
BLM 270 Parcel E Mass Grade				Westwood Professional Services
Cross Streets:	SEC of Centennial Pkwy and Puli Dr			190 Octane FT Partners, LLC
File Number:	F:\Depot\DSMemos\DS5302A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	126-26-000-003			CCRFCD
Zoning Action:				
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	7/23/2020	8/17/2020	See Comments Below	$400.00	3927972: $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 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 site is adjacent to or crosses an existing or proposed Clark County Regional Flood Control District (CCRFCD) master planned facility. Therefore, CCRFCD concurrence is required prior to final approval of the drainage study.

   Please note that effective March 15, 2019, the CCRFCD adopted new requirements for drainage study concurrence submittal. Follow the link below for specific guidance.

   http://gustfront.ccrfcd.org/LandDev/LandDev.aspx

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

3. Provide a copy of the zoning/planning conditions associated with this site 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.

4. This study covers the mass grading only. Future development of the parcel will require a technical drainage study.

5. Show and label all existing easements on the Grading Plans.

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
JKS

T/R/S: T19S/R59E/26
AREA F-26

TECHNICAL DRAINAGE STUDY

BLM 270 Parcel E Mass Grade

JULY 2020

PREPARED FOR:

190 Octane FT Partners, LLC
Las Vegas, Nevada

PREPARED BY:

Westwood

Westwood

5740 S. Arville St., Suite 216
Las Vegas, NV 89118

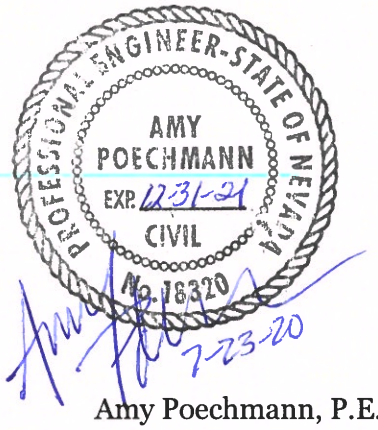
main (702) 284-5300

BLM 270 Parcel E Mass Grade

City of Las Vegas, Nevada

Prepared For:
190 Octane FT Partners, LLC
c/o Mr. Marc Bolduc
11411 Southern Highlands Pkwy, Suite 300
Phone: (702) 220-6565
Fax: (702) 220-6566

Prepared By:
Westwood Professional Services
5740 S. Arville Street, Suite 216
Las Vegas, NV 89118
Phone: (702) 284-5300
Fax: (702) 284-5339



Project Number: OLY2007.000
Date: July 2020

Amy Poechmann, P.E.
NV Professional Engineer No. 18320
Assisted by: Abhusan Achhami

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: BLM 270 Parcel E Mass Grade Date: July 2020

Location of Development:
a) Descriptive (Cross Streets): North/South: Puli Drive
East/West: Centennial Parkway
b) Section: 26 Township: 19 South Range: 59 East
c) APN: 126-26-000-003

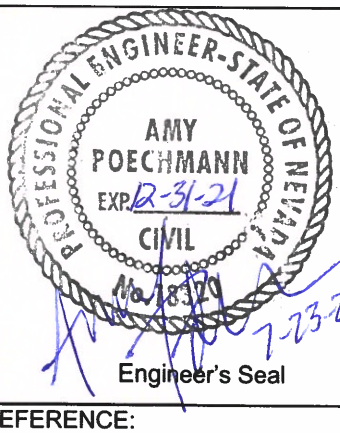
Name of Owner: 190 Octane FT Partners, LLC
Telephone No.: 702-220-6565 Fax No.: 702-220-6566 E-mail Address: mbolduc@olympiacompanies.com
Address: 11411 Southern Highlands Parkway, Suite 300 Las Vegas NV 89141

Contact Person – Name: Amy Poechmann, P.E. Telephone No.: (702) 284-5300
*E-mail Address: Amy.Poechmann@westwoodps.com Fax No.: (702) 284-5399
Firm: Westwood Professional Services
Address: 5740 S. Arville #216 Las Vegas NV 89118

Type of Land Development/Land Disturbance Process:

☐	Rezoning	☐	Subdivison 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: 265 +/- acres Being Developed/Disturbed: 67 +/- acres
2. Is a portion or all of the subject property located in a 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.): Mass Grade (future single-family residential)
5. Approximate upstream land area which drains to the subject site: 90 acres
6. Has the site drainage been evaluated in the past? ☒ Yes** ☒ No If yes, please identify documentation:
BLM 270 Master Drainage Study and Update (DS 5236)
Centennial Heights Townhomes (DS 5232)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Flows will be routed southerly in the Puli alignment and easterly in Tropical Parkway
8. Briefly describe your proposed schedule for the subject project: Mass grading ASAP. Future single-family development on Parcel E to follow



7-23-20

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.

*Newly Required Field
**Review and concurrence of the Clark County Regional Flood Control District is required

Revision	Date

Local Entity File No.

REFERENCE: STANDARD FORM 1

Updated 05/01/2008

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.)
X	-	Copies of all conditions of approval for development related to this property. (e.g. zoning, use permit, tentative map, etc.) Verify compliance with conditions.
X	-	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	
X	-	(1) 24" X 36" copy of the Grading Plan, (including all Detail Sheets) sealed by the engineer.
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. Note: Proposed top of curb elevations must be provided for both sides of roadways even if only half street construction is required.
X	-	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	
-	N/A	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.
-	N/A	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.
-	N/A	Back of lot elevations and lot drainage pattern for all lots including common lots.
X	-	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.
X	-	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.)
-	N/A	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.
-	N/A	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	
-	N/A	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.
-	N/A	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.

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: BLM 270 Parcel E Mass Grade	Map ID:
Firm Name: Westwood Professional Services	Engineer: Amy Poechmann, P.E.
Address: 5740 S. Arville #216	
City: Las Vegas	State: NV Zip: 89118
Phone Number: (702) 284-5300	Fax Number: (702) 284-5399
Property Owner: 190 Octane FT Partners, LLC	
Address: 11411 Southern Highlands Parkway, Suite 300	
City: Las Vegas	State: NV Zip: 89141

Reviewed 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 (MANUAL).

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 REQUIREMENT

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.

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, (F-x), for Flood Control Facilities and Environmental areas with the site delineated.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

II. MAPS AND EXHIBITS (Continued)

Yes	No	
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/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, widths.
-	N/A	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.
-	N/A	Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
-	N/A	Proposed typical street sections.

REFERENCE:	STANDARD FORM 2

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
-	N/A	Streets with off-set 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.
-	N/A	Location and cross-section of street capacity calculations.
-	N/A	Cross-sectional detail for channels, including cutoff wall locations.
-	-	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.
-	N/A	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.
-	N/A	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.
-	N/A	Building and/or lot numbers.
X	-	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
-	N/A	Limits of existing floodplain based on current FIRM or best available information; limits of proposed floodplains based on best available information.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
-	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	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.
-	N/A	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
-	N/A	Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

Referenced hydrology

Yes	No	
-	N/A	Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
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 subbasin boundaries and cutoffs, supporting assumptions, and calculations.
X	-	A summary table of stormwater flows showing basin area, Q_{10} and Q_{100} 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 property owners in accordance with current Nevada Drainage Law.
-	N/A	Calculation 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.
-	N/A	Normal depth street flow calculations and cross section diagrams for all interior and perimeter streets. 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.
-	N/A	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.)
-	N/A	Appropriate hydraulic calculations at drainage easement entrance and discharge locations to set finish floor elevations. Hydraulic calculations must include submerged weir, superelevation and tee intersection losses, where appropriate.
-	N/A	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, whichever 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 the report.
-	N/A	Provide a 50 percent clogging factor in the capacity calculation for drop inlets.
-	N/A	Hydraulic calculations for culverts and storm drains. D-Load calculations must be provided for storm drain pipes in public rights-of-way, including headwater pool inundation.
X	-	The mitigation of nuisance water, both during construction and in the fully developed condition, must be addressed.
-	N/A	Provide BMP type, size and supporting calculations for parking lots and LIDs (if required).

REFERENCE:	STANDARD FORM 2

Westwood

5740 S. Arville St., Suite 216
Las Vegas, NV 89118

Main (702) 284-5300

westwoodps.com
(888) 937-5150

OLY2007.000

Albert Sung, P.E.
City of Las Vegas
333 Rancho Drive (7th Floor)
Las Vegas, NV 89101

Subject: BLM 270 Parcel E Mass Grade Technical Drainage Study

Mr. Sung:

This letter certifies that all items provided on electronic submittal CD matches 100% of the *BLM 270 Parcel E Mass Grade Technical Drainage Study* bound paper version.

Respectfully Submitted,
WESTWOOD PROFESSIONAL SERVICES

Amy Poechmann, P.E.
Project Manager – Water Resources Department

Westwood

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Westwood

Appendices

Appendix A: Drainage Exhibits

- Exhibit A: Vicinity Map
- Exhibit B: FEMA Firm Panel Map
- Exhibit C1: CCRFCD MPU Facility Map
- Exhibit C2: CCRFCD MPU Facility Inventory Table
- Exhibit C3: CCRFCD Watershed Map
- Exhibit D: Proposed Condition Drainage Map

Appendix B: Reference Material

Master Drainage Study and Update No. 1 for BLM 270; by Westwood (DS5236; RFCD 20-12469)

- Approval Letters
- Referenced Drainage Exhibits
- Referenced Report Excerpts
- Referenced Hydrologic Computations

Appendix C: Reference Material

Technical Drainage Study for Centennial Heights Townhomes, by Horrocks Engineers (DS5232)

- Approval Letter
- Referenced Drainage Exhibits
- Referenced Report Excerpts
- Referenced Hydrologic Computations
- Referenced Plan Sheets

Appendix D: Planning and Zoning Conditions

Appendix E: Grading Plan and Detail Sheets

1.0 Introduction

1.1 Project Overview & Study Purpose

190 Octane FT Partners, LLC is proposing to mass grade Parcel E (hereinafter referred to as the project site) within the BLM 270 residential development in Las Vegas, Nevada. The proposed area of mass grade is approximately 67 acres of the approximately 265 +/- acres at BLM 270 site. The purpose of this study is to provide a detailed hydrologic and hydraulic analysis of the project. The study will address the proposed mass grading and ensure no adverse impact to the existing storm drain facilities.

1.2 Description of Project

The project site is located within Township 19 South, Range 59 East, and Section 26 on portions of Assessor's Parcel Number (APN) 126-26-000-003. The project site is bound by Centennial Parkway to the north, undeveloped land to the west (future Sheep Mountain Parkway), the Puli alignment (to be developed as a trail) to the east, and Tropical Parkway to the south. A location map identifying the site in relation to the surrounding streets has been prepared as Exhibit A, included in Appendix A.

The project site will be mass graded with this study. Parcel D is an import site and Parcel E is an export site so the intent is to remove dirt from Parcel E and move it to Parcel D. Any earthwork on Parcel D should be covered by the grading permit with the technical drainage study for that site (which has already been submitted for review). A copy of the planning and zoning conditions associated with the BLM 270 site are included in Appendix D.

1.3 FEMA Flood Zone Designation

The project site boundary has been delineated on current FEMA FIRM Panel Map 32003C1750E dated September 27, 2002. Per the FIRM Panels, the project site is located within a FEMA designated Zone 'X' (unshaded). Zone 'X' (unshaded) is described by FEMA as *areas determined to be outside the 0.2% annual chance floodplain.* Exhibit B, identifying the project site on the FEMA FIRM Map, has been included in Appendix A for reference.

1.4 CCRFCD Facility Information

The project site has been delineated on the current 2018 Clark County Regional Flood Control District (CCRFCD) Las Vegas Valley Flood Control Master Plan Update (2018 MPU, Reference 1) Facility Figures as Exhibit C1, included in Appendix A. Per the 2018 MPU, CCRFCD Facilities Gowan Ann Road Detention Basin Facilities (GOAN 0000) and Gowan Beltway West (GOBW 0315) are located along Tropical Parkway to the south and Centennial Parkway to the north of the project site, respectively. The runoff generated by the project site discharges into the existing facilities at Tropical Parkway (along regional GOAN facility alignment) through the proposed storm drain stub provided by with the Centennial Heights Townhomes development.

1.5 Referenced Documents

The following studies and associated improvement plans have been reviewed and deemed acceptable for reference by this study. Westwood concurs with the referenced and adopted hydrologic and hydraulic analyses from the studies and the results established therein.

- *Update No. 1 to the Master Drainage Study for BLM 270 (DS5236; RFCD 20-12469)* (hereafter referred to as the MDS Study) and prepared by Westwood, established allowable flow rates, ultimate condition flow rates and offsite flowrates for the BLM 270 area, which includes Parcel E. Hydrologic basins from the MDS Study are referenced in this study. Relevant reference material from the MDS Study has been included in Appendix B.

- *Technical Drainage Study for the Centennial Heights Townhomes (DS5232)* (hereafter referred to as the Townhomes Study) and prepared by Horrocks Engineers, established drainage patterns for the Centennial Heights Townhomes development. The diversion of flow onsite is referenced from this study as well as the flow at the upstream end of the storm drain in Tropical Parkway. Relevant reference material from the Townhomes Study has been included in Appendix C.

2.0 Methodology

2.1 Compliance

The methodologies utilized in the preparation of this study are in compliance with the Clark County Regional Flood Control District's Hydrologic Criteria and Drainage Design Manual (CCRFCD Manual, Reference 2).

2.2 Hydrologic Modeling

No hydrologic basins were newly analyzed with this study. All drainage basins have been referenced, as detailed below in Sections 3 and 4 of this report.

2.2 Hydraulic Modeling

No street improvements or drainage facilities are proposed with this study. This study only addresses mass grading of Parcel E and has been designed to match existing patterns to avoid any impacts to the existing streets and drainage facilities.

3.0 EXISTING DRAINAGE CONDITION

3.1 Definition of Existing Condition

The existing condition considers the drainage and roadway infrastructure improvements proposed in the Townhomes Study to be in place and functioning. The project site is currently undeveloped desert. The existing condition is equivalent to the Phase 1 interim condition of the Townhomes Study. Therefore, the drainage patterns and flow rates for the existing condition have been referenced from the Townhomes Study. Refer to Appendix C for reference material from the Townhomes Study.

3.2 Discussion of Existing Condition

Refer to referenced Exhibit 6, included in Appendix C, for a detailed illustration of the existing condition drainage patterns (which are the Phase 1 interim condition patterns in the referenced study).

The Parcel E project site is within offsite basins OF-E1 through OF-E7 west of the Townhomes site. The basin flows are routed into the interm ditch along the Puli alignment in this condition

which is proposed as part of the Townhome Study. Flows will be routed south in the ditch to a proposed storm drain stub which routes most of the offsite flows into a proposed storm drain system in Tropical Parkway which routes the flows east toward the Beltway.

The Townhomes study proposes an interim ditch in the Sheep Mountain Parkway alignment west of Parcel E which is assumed to be in place for this condition and helps route flows further south before they impact the interim ditch in the Puli alignment. Refer to Appendix C for relevant reference material from the Townhomes study.

4.0 PROPOSED DRAINAGE CONDITION

4.1 Definition of Proposed Condition

The proposed condition considers the Parcel E site to be mass graded. All offsite areas are assumed to remain unchanged from the existing condition with perimeter streets and associated drainage facilities in place and functioning.

4.2 Discussion of Proposed Condition

Refer to Exhibit D, included in Appendix A, for a detailed illustration of the proposed condition drainage patterns.

The intent of this mass grading is to take dirt from the Parcel E site and move it to Parcel D. Therefore, the mass grading generally consists of removing dirt and reducing the existing elevations. Although it is the intent to bring the project site closer to the final proposed grades, care has been taken to ensure that the existing drainage patterns are not revised. The design intent is to match the existing flow patterns so that any impact to the downstream developments is negligible.

Since the project site is being graded, but no improvements are proposed, it is assumed that the flow rates for the project site are not increased beyond the undeveloped flow rates generated in the existing condition. Therefore, revised hydrologic computations are not required and the interim condition offsite basins are still valid for reference in the proposed condition of this study.

4.3 Summary of Proposed Condition Flows

A summary of the referenced proposed condition flow rates, as determined by referenced HEC-1 analysis has been included on Exhibit D and the supporting HEC-1 model has been provided in Appendix C for reference.

4.3 Comparison of Existing and Proposed Condition Flows

The table below compares the existing and proposed condition flow rates for this study.

Flow Rate Comparison		
Basin/Concentration Point ID	**Existing Q_{100} (cfs)**	**Proposed Q_{100} (cfs)**
OF-E1	13	13
OF-E2	16	16
OF-E3	28	28
OF-E4	83	83
OF-E5	2	2

Flow Rate Comparison		
Basin/Concentration Point ID	Existing Q_{100} (cfs)	Proposed Q_{100} (cfs)
OF-E6	47	47
OF-E7	158	158
ST-E1	2	2

As shown in table above, the flow rates are not increased with the mass grading of the project site. Therefore, the proposed grading does not negatively impact the downstream development and is acceptable.

4.4 Summary of Proposed Condition Street Flows

No street improvements are being proposed with this study. In addition, the flows impacting the proposed Tropical Parkway street improvements with the Townhomes Study, will not change. Therefore, no street hydraulic computations are provided as part of this study.

4.5 Summary of Drainage Facilities - Proposed Condition

The flows from the project site are routed to the interim ditch in the Puli alignment and then the Tropical storm drain per the Townhomes Study. Since the impacting flows have not been changed, the hydraulic computations provided with the Townhomes Study are still valid. Therefore, no hydraulic computations have been provided with this study.

Flows will cross the mass graded Parcel E and may cause some erosion due to the existing steep slopes of the terrain. The owner will be responsible for maintaining the project site and ensuring that onsite drainage patterns are maintained and that sediment does not impact the downstream improvements while the site is mass graded.

4.0 ULTIMATE DRAINAGE CONDITION

4.1 Definition of Ultimate Condition

The ultimate condition considers the Parcel E site to be full developed per the BLM 270 MDS. All offsite areas are also assumed to be fully developed per the BLM 270 MDS.

4.2 Discussion of Ultimate Condition

Refer to referenced Exhibits E1 and E2, included in Appendix B, for a detailed illustration of the ultimate condition drainage patterns. The MDS has conceptually addressed the ultimate condition for Parcel E. A future technical drainage study for Parcel E will address the technical design of the parcel and a future infrastructure study for Tropical Parkway will address the technical design of the Tropical infrastructure. Refer to relevant reference material in Appendix B for further discussion.

4.3 Summary of Ultimate Condition Flows

A summary of the referenced ultimate condition flow rates, as determined by referenced HEC-1 analysis has been included on the referenced exhibits and the referenced HEC-1 model has been provided in Appendix B for reference.

5.0 CONCLUSIONS & RECOMMENDATIONS

1. This project is in compliance with the applicable drainage laws as recognized by the state of Nevada. This project is in compliance with the CCRFCD "*Hydrologic Criteria and Drainage Design Manual*" (Reference 2).

2. The project site is not located within a FEMA designated Special Flood Hazard Area (SFHA). The project site and the proposed improvements are located within a FEMA flood Zone "X" (unshaded). Therefore, FEMA notification will not be required.

3. The project site is proposed to be constructed in multiple phases. Therefore, recommendations are only provided for technical designs and analyses pertinent to the mass grade improvements. Additional technical studies will be provided for future infrastructure and developments.

4. This study assumes that Tropical Parkway street improvements and the drainage improvements, including the interim ditches and the Tropical storm drain, addressed by the Townhomes Study are in place and functioning.

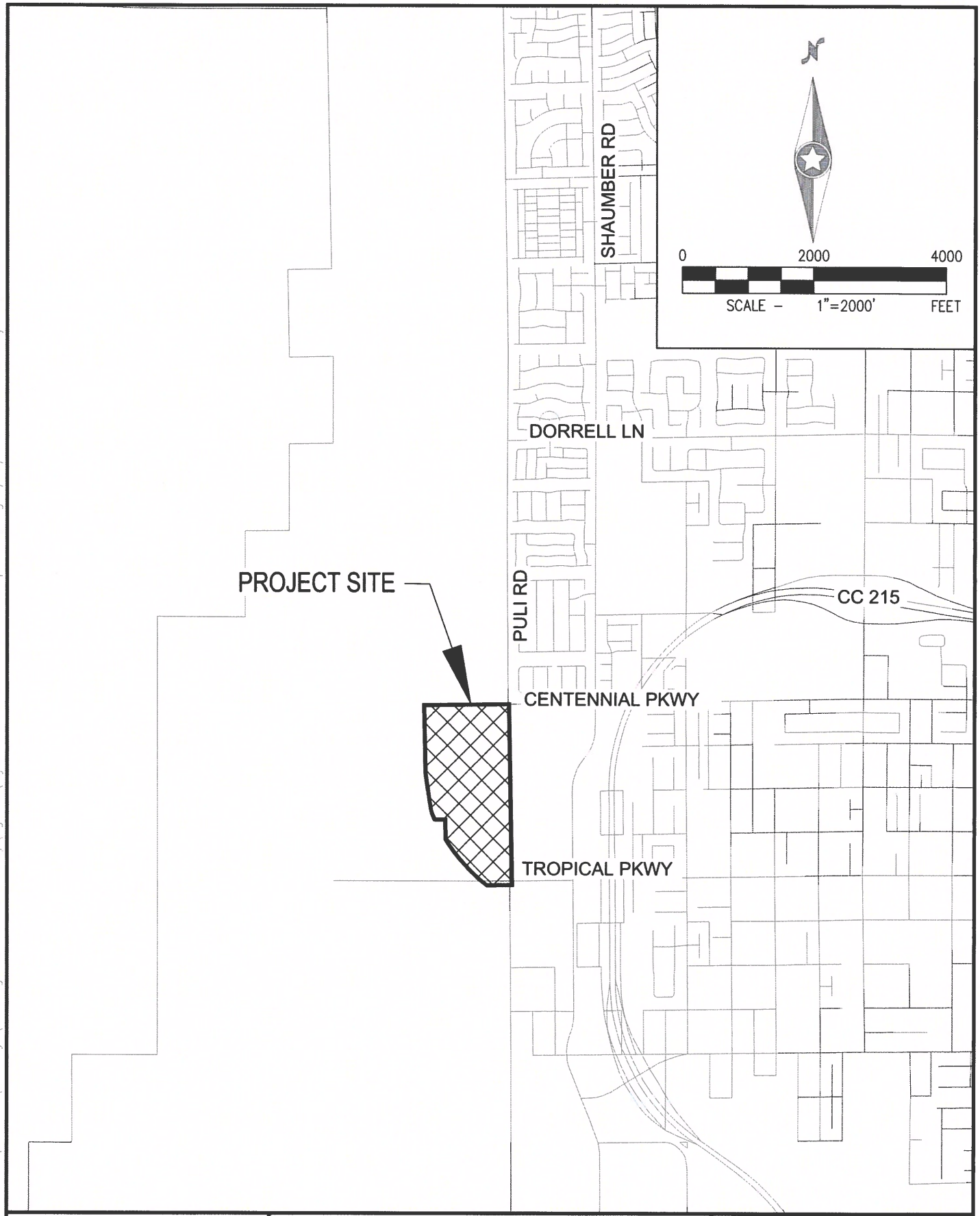
6.0 REFERENCES

1. Las Vegas Valley Flood Control Master Plan Update, SNC Lavalin/Atkins, in association with Louis Berger Group, February 2018.

2. Hydrologic Criteria and Drainage Design Manual. Clark County Regional Flood Control District, 1999.

APPENDIX A

Drainage Exhibits



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BLM 270 PARCEL E MASS GRADE

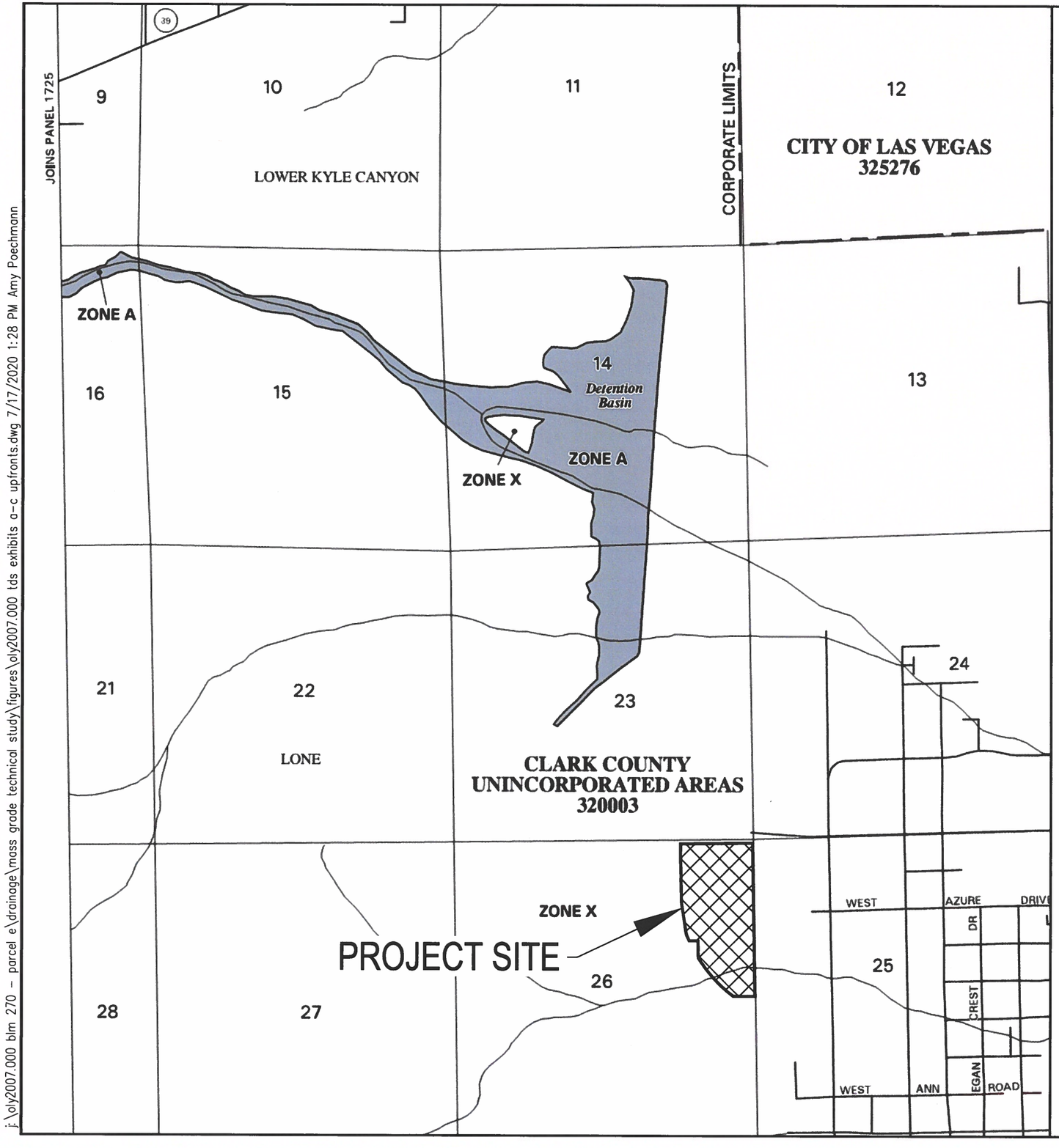
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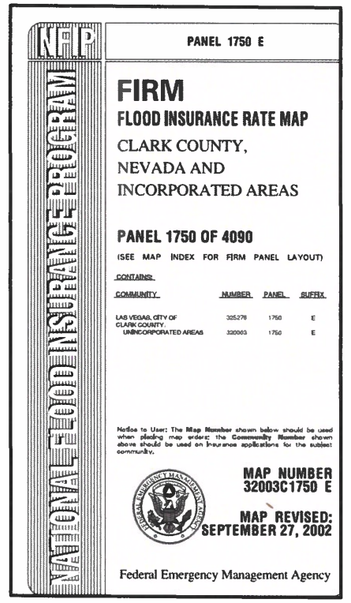
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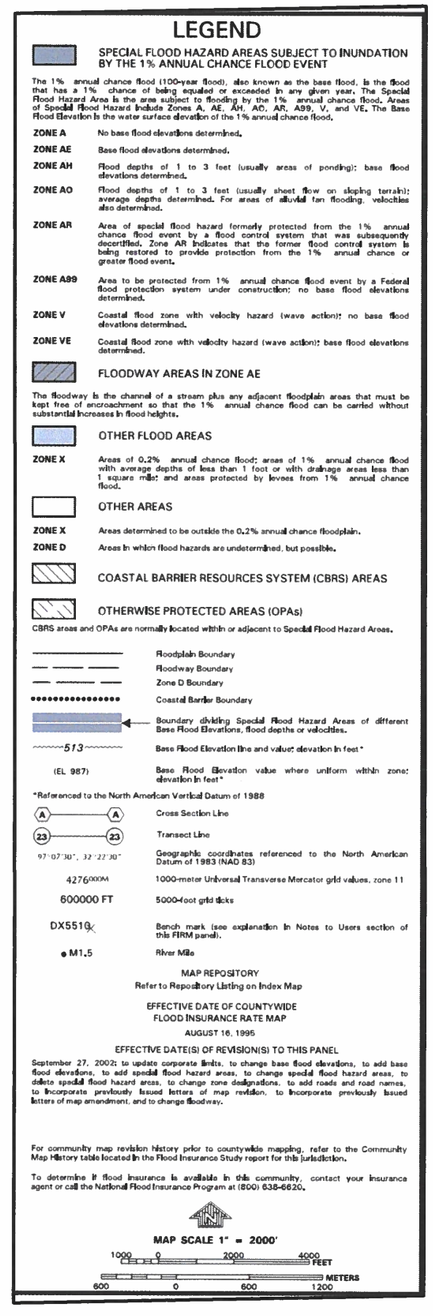
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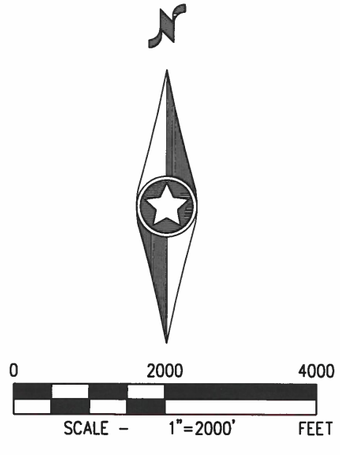
EXHIBIT A

SHEET 1 OF 1









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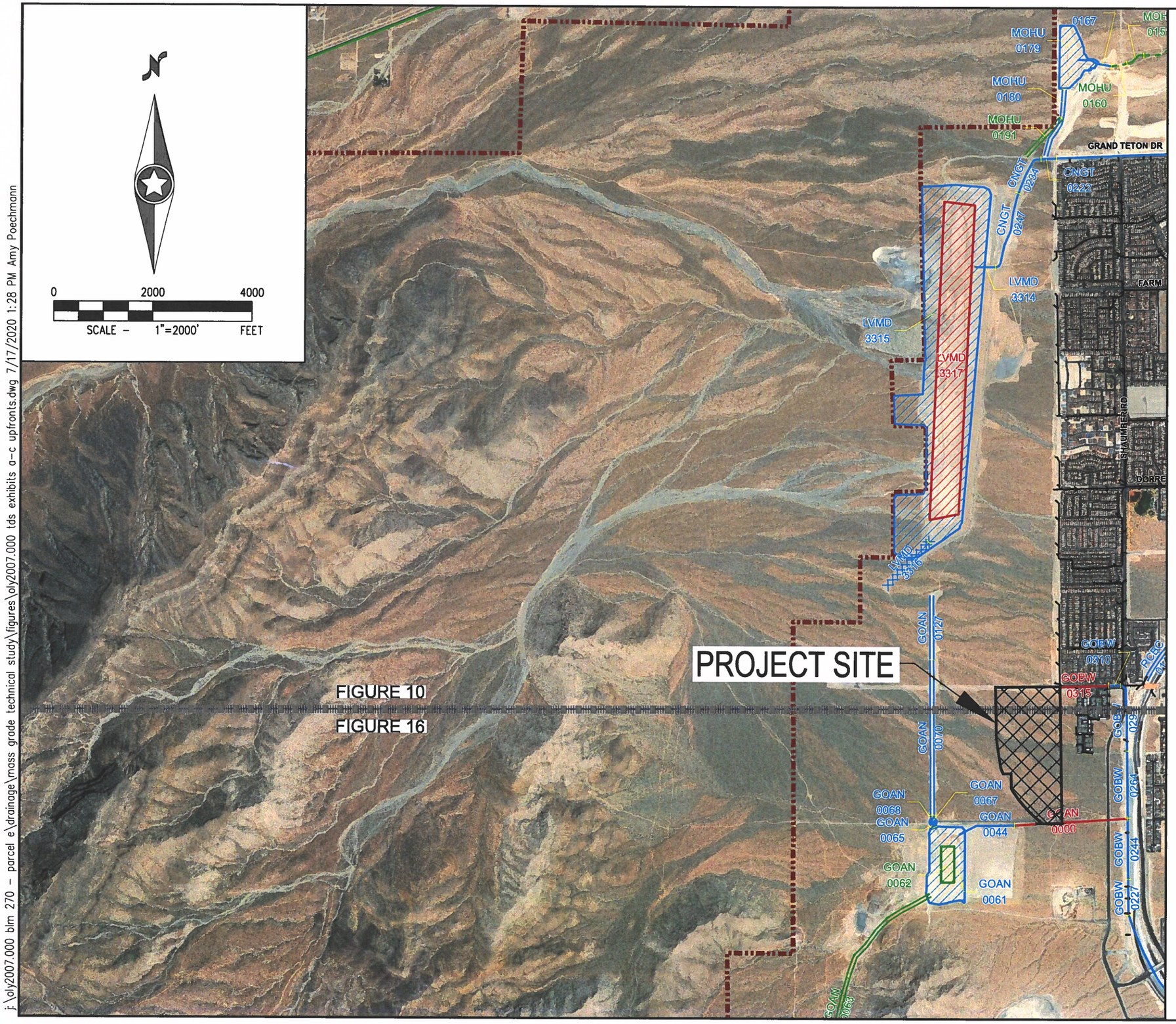
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BLM 270 PARCEL E MASS GRADE
FEMA FIRM MAP

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PROJECT NO.	OLY2007.000

EXHIBIT B
SHEET 1 OF 1

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REGIONAL FLOOD CONTROL DISTRICT

2018
LAS VEGAS VALLEY
FLOOD CONTROL
MASTER PLAN UPDATE

FIGURE F-10

FIGURE F-16
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

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BLM 270 PARCEL E MASS GRADE
CCRFCD MPU FACILITY MAP

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PROJECT NO.	OLY2007.000

EXHIBIT C1
SHEET 1 OF 1

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ID / Mile	Status	Facility Description	Length (ft.)	Flow (cfs)	HEC-1 Node	HEC-1 Model	Tributary Area (sq.mi.)	Channel Slope (%) **
CNGT		**CENTENNIAL PKWY CHANNEL WEST / GRAND TETON BRANCH**						
0118	E	6' X 5' RCAP	5472	349	KYLEDET	KYLEDB	58.61	3.72
0222	E	6' X 6' RCAP	305	349	KYLEDET	KYLEDB	58.61	1.16
0234	E	6' X 4' RCAP	885	349	KYLEDET	KYLEDB	58.61	4.50
0247	E	6' X 5' RCAP	1600	349	KYLEDET	KYLEDB	58.61	1.63
GOAN		**GOWAN ANN ROAD DETENTION BASIN FACILITIES**						
0070	E	SOIL CEMENT CHNL 10'W 4'-7'D 4:1 SS	3125	1075	CCAMDK3	GOW3A	0.66	3.00
0127	E	SOIL CEMENT CHNL 10'W 2'-6'D 4:1 SS	1292	578	CAMDK2	GOW3A	0.34	1.73
GOBW		**GOWAN BELTWAY WEST**						
0291	E	8' X 6' RCB	1309	783	CMNA2	GOW3A	0.49	1.70
0310	E	54" RCP	250	501	CDMNA3	GOW3A	0.30	4.73
0315	P	54" RCP	976	501	CDMNA3	GOW3A	0.30	4.00
KCUN		**KYLE CANYON AND UNKNOWN**						
0000	P	60" RCP	685	283	NW1-C	LOWER3	0.29	2.20
LVMD		**LAS VEGAS WASH - MIDDLE**						
3313	E	120,000 CFS PMF SPILLWAY		120000	KYLEDB	KYLEDB	58.61	
3314	E	78" RCP OUTLET	385	349	KYLEDET	KYLEDET	58.61	1.00
3315	E	3,200 AC-FT KYLE CANYON DETENTION BASIN		17145	KYLEDB	KYLEDB	58.61	
3316	E	RIPRAP LEVEE (SOUTH) 5'	1250	17145	KYLEDB	KYLEDB	58.61	3.00
3317	P	UPGRADE TO 4,343 AC-FT KYLE CANYON DETENTION BASIN		17145	KYLEDB	KYLEDB	58.61	
MOHU		**MOCCASIN-HUALAPAI BRANCH**						
0116	P0	NATURAL WASH	1900	263	CNW45-C	LOWER3	1.03	3.00
0151	P0	54" RCPC @ SHAUMBER	438	72	MODB1	LOWER3	0.86	2.00
0160	P0	NATURAL WASH	360	72	MODB1	LOWER3	0.86	3.00
0167	E	60" RCP W/ 24" ORIFICE PLATE	695	72	MODB1	LOWER3	0.86	2.60
0178	E	6,052 CFS SPILLWAY		6052	COFF20	LOWER3	0.86	
0179	E	78.7 AC-FT MOCCASIN OUTFALL DETENTION BASIN #1		881	COFF20	LOWER3	0.86	
0180	E	CONC CHNL 12'W 5.5'D 3:1 SS	1454	526	OFF21	LOWER3	0.49	3.00
0191	P0	CONC CHNL 12'W 5'D 3:1 SS	1020	526	OFF21	LOWER3	0.49	1.50
MOIR		**MOCCASIN - IRON MOUNTAIN BRANCH**						
0041	P0	42" RCP	1236	71	MODB2	LOWER3	0.56	5.00
0065	P0	60" RCP	1099	71	MODB2	LOWER3	0.56	0.40
0085	P0	60" RCP OUTLET W/ 24" ORIFICE PLATE	800	71	MODB2	LOWER3	0.56	0.40
0097	P0	6,101 CFS SPILLWAY		6101	COFF16	LOWER3	0.56	
0098	P0	76.3 AC-FT MOCCASIN OUTFALL DETENTION BASIN #2		635	COFF16	LOWER3	0.56	
0099	P0	CONC CHNL 12'W 3'D 3:1 SS	723	205	OFF18	LOWER3	0.17	3.00
MOKC		**MOCCASIN AND KYLE CANYON**						
0000	P0	9' X 6' RCB	6140	1072	CNW35-C	LOWER3	2.69	3.40
0116	P0	8' X 6' RCB	2660	963	CNW21-C	LOWER3	2.35	3.40
0166	P0	8' X 6' RCB W/ 24' x 6' OUTLET	305	931	RDBCNW7	LOWER3	2.19	3.40
0172	P0	22,070 CFS SPILLWAY		22070	CNW-7	LOWER3	2.19	
0173	P0	71 AC-FT KYLE CANYON SEDIMENT BASIN		1839	CNW-7	LOWER3	2.19	
0325	P0	9' X 8' RCB	3035	1839	CNW-7	LOWER3	2.19	3.65
0380	P0	90" RCP	8700	1440	2CNW1-C	LOWER3	1.70	3.73
MOSH		**MOCCASIN AND SHEEP MOUNTAIN**						
0000	P	CONC CHNL 12'W 6'D 0:1 SS	2640	1198	COFF1A-6	SPRING3	3.70	2.71
0053	P	CONC CHNL 12'W 6'D 0:1 SS	2640	1045	COFF2B	SPRING3	3.23	1.39
RCBC		**RANCHO ROAD SYSTEM - BELTWAY CHANNEL**						
0140	E	CONC CHNL 10'W 5'D 0:1 SS	2155	475	CDMNA1	WEST3	0.43	1.65

*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-10

LEGEND

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

Existing Facility.....E
Proposed or Modified Facility.....P
Contingency Level
Category A.....P
Category 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

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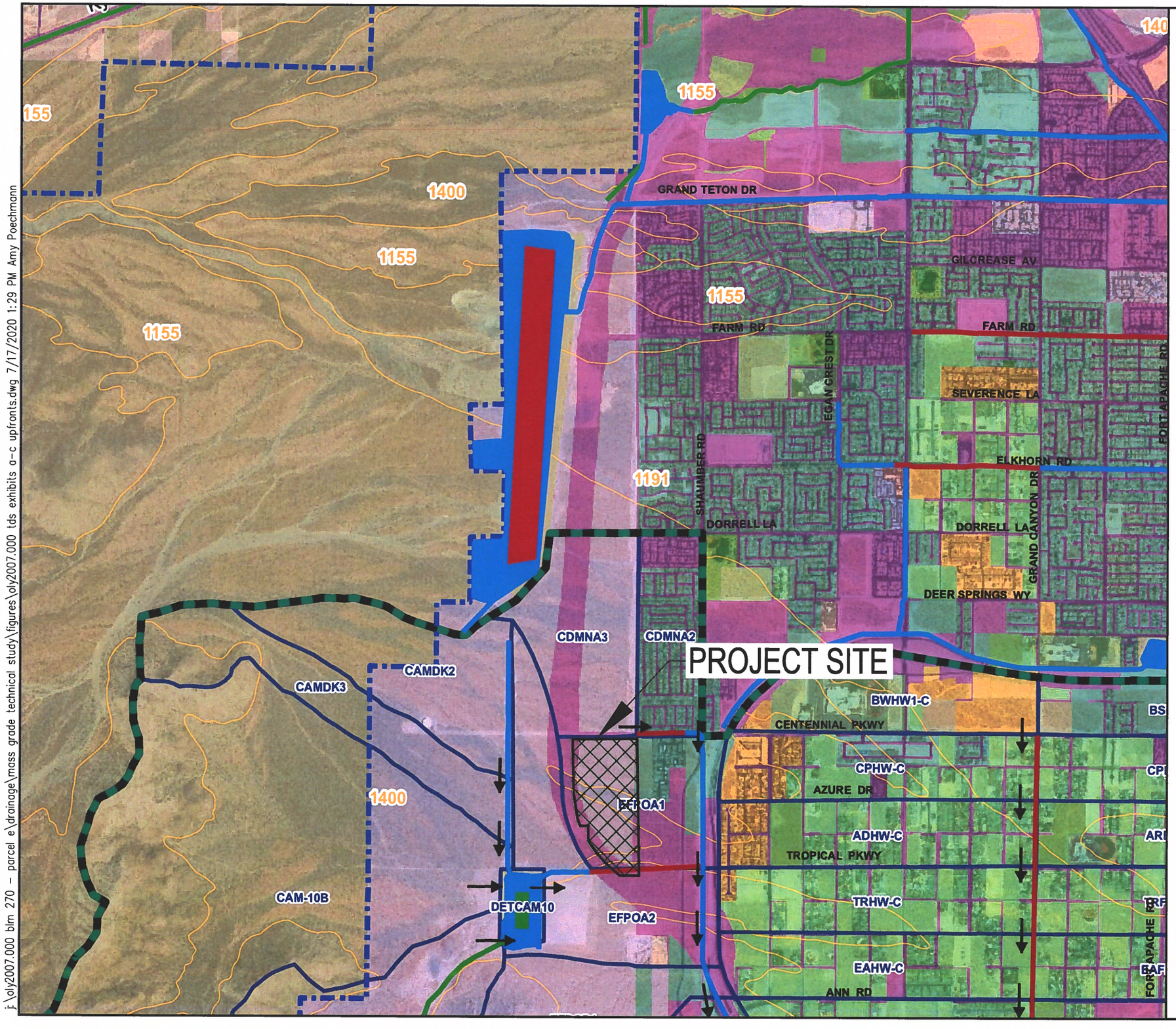
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BLM 270 PARCEL E MASS GRADE
CCRFCD MPU FACILITY INVENTORY TABLE

DATE: JULY 2020
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PROJECT NO. OLY2007.000

EXHIBIT C2
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REGIONAL FLOOD CONTROL DISTRICT

2018 Las Vegas Valley Master Plan Update

Figure W-4
Gowan Watershed

Legend

- Flow Arrows
- NodeID flow(cfs) Concentration Points
- Existing Facilities
- Category A Proposed Facilities
- Category B Proposed Facilities
- Ultimate Development Boundary
- Watershed
- BasinID Subbasins
- MU13_IM Soils
- 1: Undeveloped Land, Open desert
- 2: Parks, Golf Courses
- 3: Rural, 0.5-1 units per acre (uses 1 unit/acre)
- 4: Low-Density Residential, 1-2 units per acre (uses 2 units/acre)
- 5: Medium-Density Residential, 2-4 units per acre (uses 3 units/acre)
- 6: High-Density Residential, 4-8 units per acre (uses 6 units/acre)
- 7: Public Facility and Residential, 8-12 units/acre
- 8: Very High-Density Residential, 12 units/acre or more
- 9: Commercial, Retail, Casino, High Rise Condominiums
- 10: Light Industrial
- 11: Heavy Industrial
- 12: Schools
- 13: Lakes



N

0 2000 4000
SCALE – 1"=2000' FEET

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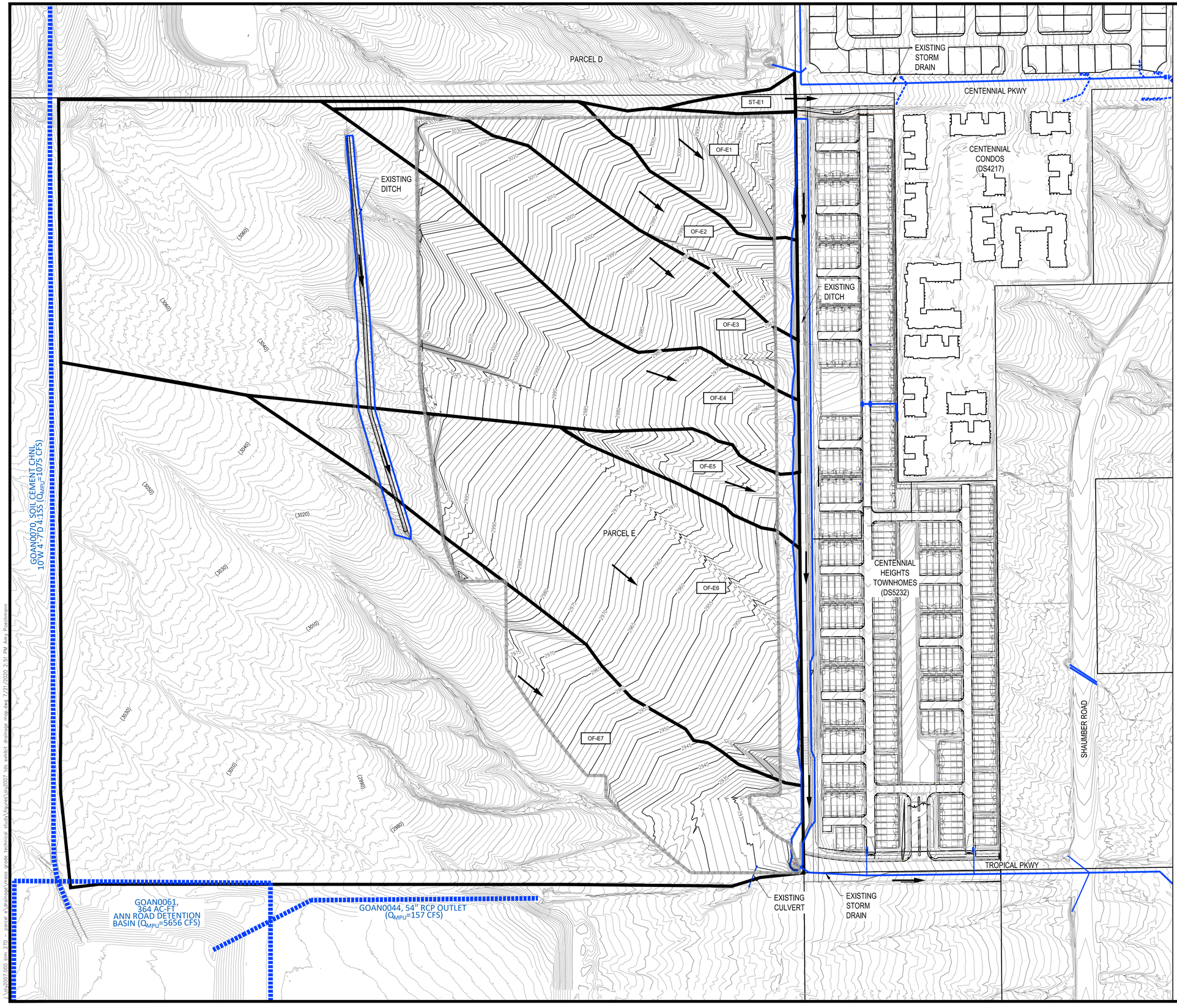
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BLM 270 PARCEL E MASS GRADE
CCRFCD WATERSHED MAP

DATE:	JULY 2020
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PROJECT NO.	OLY2007.000

EXHIBIT C3
SHEET 1 OF 1

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SCALE – 1"=150' FEET

LEGEND

- PROJECT BOUNDARY
- BASIN BOUNDARY
- PRORATED SUBBASIN BOUNDARY
- EXISTING DRAINAGE FACILITY
- PROPOSED DRAINAGE FACILITY
- ID — BASIN ID
- (ID) — PRORATED SUBBASIN ID
- (ID) — CONCENTRATION POINT ID
- FLOW DIRECTION

Proposed Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
OF-E1	4.60	13	5
OF-E2	6.12	16	7
OF-E3	10.78	28	11
OF-E4	40.00	83	29
OF-E5	2.94	2	<1
OF-E6	23.32	47	16
OF-E7	67.80	158	59
ST-E1	0.58	2	1

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BLM 270 PARCEL E MASS GRADE
PROPOSED CONDITION DRAINAGE MAP

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EXHIBIT D
SHEET 1 OF 1

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APPENDIX B

Reference Material
Update No. 1 to Master Drainage Study for BLM 270
By Westwood (DS5236; RFCD 20-12469)

Approval Letters

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: July 9, 2020
TO: **Land Development Services** Department of Building & Safety				FROM: Jennifer Shinn, P.E. Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for: **BLM 270 Master Drainage Study**			**COPIES TO:** Westwood
Cross Streets:	SWQ of Farm Road and Puli Road			Olympia Companies
File Number:	F:\Depot\DSMemos\DS5236C.doc			Bart Anderson, P.E., DevCo
Parcel Number:	126-14-000-003, 126-23-000-003, 126-26-000-001			CCRFCD
Zoning Action:	N/A			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	1/14/2020	2/5/2020	See Comments Below	$400.00	3703984: $400
2nd Submittal	4/1/2020	4/1/2020	Approved	N/C	N/C
3rd Submittal	6/4/2020	7/8/2020		$100.00	3875461: $100
			TOTAL FEES (LDDRS):	**$500.00**	**----**

REMARKS:

3rd Submittal: Update #1 to establish Centennial Parkway as a hydrologic cutoff during Proposed Condition, extended analysis south of Tropical Parkway, Sheep Mountain Parkway considered undeveloped in the Proposed Condition, ultimate Sheep Mountain Parkway flows routed south of Tropical Parkway instead of east in Tropical Parkway.

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

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

1. **This drainage study is acceptable in concept**; however, City of Las Vegas will not formally accept the study until the Clark County Regional Flood Control District (CCRFCD) has issued a letter of concurrence. The engineer should contact the CCRFCD to confirm that they have begun their review.

   Please note that effective March 15, 2019, the CCRFCD adopted new requirements for drainage study concurrence submittal. Follow the link below for specific guidance.

   http://gustfront.ccrfcd.org/LandDev/LandDev.aspx

   Please note that effective April 6, 2020, only electronic submittals to the CCRFCD will be accepted for regional concurrence. Contact cwang@regionalflood.org for direction.

2. The overall concept presented in the BLM 270 Master Drainage Study appears to satisfy the intent of providing regional connectivity of proposed Master Planned facilities without impacting the

downstream neighborhoods and existing flood control facilities. Specific Technical Drainage Studies shall be required to address the specific impacts of each proposed Master Planned facility and the interaction with proposed facilities needed for each phase of development.

3. The BLM 270 Master Drainage Study Update indicates the CCRFCD Master Plan Facilities to be constructed by the Master Developer:
   a. Future Facility GOAN 0000 - Upsized from a 54-inch RCP to a 60-inch RCP
   b. Future Facility GOBW 0315 – Upsized from a 54-inch RCP to a 60-inch RCP
   c. Existing Facility GOBW0310 – Upsized from a 54" RCP to a 60-inch RCP and 5'x5' RCB
4. It appears that Puli Road will be vacated and will developed as a linear park. The future Technical Drainage Studies shall address and provide Public Drainage Easements to be privately maintained for the facilities conveying flows through multiple parcels.
5. The WSPG models provided indicate there are segments of storm drain with velocities greater than 25 fps. The engineer shall review the velocity impacts and recommend a course of action for City approval with each technical drainage study for the corresponding facilities.
6. The Master Study Update assumes that Centennial Parkway acts as a hydrologic cut off for offsite flows coming from the northwest during the Proposed Condition.
7. The Master Study assumes that Sheep Mountain Parkway acts as a cut off for offsite flows coming from the west, downstream of Kyle Canyon Detention Basin (MPU ID LVMD 3315) and Gowan Ann Road Detention Basin Soil Cement Channel (MPU ID GOAN 0070, 0127). As indicated in the report, a separate Technical Drainage Study shall be provided for the development of Sheep Mountain Parkway. The interim conditions shall be addressed with the technical drainage studies for each pod. The discharge impacts must be accounted for in the interim conditions without negatively impacting the existing downstream neighborhoods.
8. Please note that any future technical drainage study submittals that differ from the Master Drainage Study (i.e. Changes in pods, infrastructure, flows, etc.) will require an update to the Master Drainage Study and this update must be approved by the City of Las Vegas Flood Control Section prior to final approval of the technical drainage study.
9. Please note that the proposed 100-year flood protection facilities identified on Exhibit F must be constructed by the Master Developer as a part of the master planned infrastructure. Technical Drainage Studies are required for each phase of the master planned infrastructure improvements. The technical drainage studies for the infrastructure improvements may be submitted with conditional approval of this Master Drainage Study. However, final approval for the Master Drainage Study must be obtained prior to conditional approval of the infrastructure drainage studies.
10. Technical drainage studies are required for each of the pods. Final approval for the infrastructure drainage study must be obtained prior to conditional approval of the impacted pod drainage studies.
11. Building permits for the homes within the individual pods will not be issued until construction of the street and flood control infrastructure around the pod is substantially complete or interim protection is provided per the approved technical drainage study.
12. Please note that all proposed interim facilities must be maintained by the Master Developer.
13. Continue to coordinate the proposed drainage facilities with Sheep Mountain Parkway project. Please contact Greg McDermott, P.E. at (702) 229-2143 to coordinate the proposed drainage facilities.
14. Continue to coordinate the proposed drainage facilities with the Centennial Heights project (DS5232) by Horrocks Engineers.

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
JKS

T/R/S: T19S/R59E/14
AREA F-23

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: February 10, 2020
TO: **Land Development Services** Department of Building & Safety				FROM: Jennifer Shinn, P.E. Flood Control, Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for: **BLM 270 Master Drainage Study**			**COPIES TO:** Westwood
Cross Streets:	SWQ of Farm Road and Puli Road			Olympia Companies
File Number:	F:\Depot\DSMemos\DS5236A.doc			Bart Anderson, P.E., DevCo
Parcel Number:	126-14-000-003, 126-23-000-003, 126-26-000-001			CCRFCD
Zoning Action:	N/A			
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	1/14/2020	2/5/2020	See Comments Below	$400.00	3703984: $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:
	must be resubmitted or supplemented including the following:
X	is conditionally approved subject to Clark County Regional Flood Control District concurrence.
	is conditionally approved subject to Clark County Public Works Department concurrence.

1. **This drainage study is acceptable in concept;** however, *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District (CCRFCD)* has issued a letter of concurrence. The engineer should contact the CCRFCD to confirm that they have begun their review.
2. The overall concept presented in the BLM 270 Master Drainage Study appears to satisfy the intent of providing regional connectivity of proposed Master Planned facilities without impacting the downstream neighborhoods and existing flood control facilities. Specific Technical Drainage Studies shall be required to address the specific impacts of each proposed Master Planned facility and the interaction with proposed facilities needed for each phase of development.
3. The BLM 270 Master Drainage Study indicates the CCRFCD Master Plan Facilities to be constructed by the Master Developer:
    a. Future Facility GOAN 0000 - Upsized from a 54-inch RCP to a 78-inch RCP
    b. Future Facility GOBW 0315 - 54-inch RCP
4. It appears that Puli Road will be vacated and will developed as a linear park. The future Technical Drainage Studies shall address and provide Public Drainage Easements to be privately maintained for the facilities conveying flows through multiple parcels.

5. The WSPG models provided indicate there are segments of storm drain with velocities greater than 25 fps. The engineer shall review the velocity impacts and recommend a course of action for City approval with each technical drainage study for the corresponding facilities.
6. The Master Study assumes that Sheep Mountain Parkway acts as a cut off for offsite flows coming from the west, downstream of Kyle Canyon Detention Basin (MPU ID LVMD 3315) and Gowan Ann Road Detention Basin Soil Cement Channel (MPU ID GOAN 0070, 0127). As indicated in the report, a separate Technical Drainage Study shall be provided for the development of Sheep Mountain Parkway. The interim conditions shall be addressed with the technical drainage studies for each pod. The discharge impacts must be accounted for in the interim conditions without negatively impacting the existing downstream neighborhoods.
7. Please note that any future technical drainage study submittals that differ from the Master Drainage Study (i.e. Changes in pods, infrastructure, flows, etc.) will require an update to the Master Drainage Study and this update must be approved by the City of Las Vegas Flood Control Section prior to final approval of the technical drainage study.
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END OF REMARKS
JKS

T/R/S: T19S/R59E/14
AREA F-23

REGIONAL FLOOD CONTROL DISTRICT

Steven C. Parrish, P.E.
General Manager/Chief Engineer

BOARD OF DIRECTORS

Lawrence L. Brown, III
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Clark County

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City of Boulder City

April 1, 2020

Mr. Oh Sang Kwon, P.E.
City of Las Vegas Department of Public Works
333 North Rancho Drive
Las Vegas, NV 89106

DISTRICT CONCURRENCE: BLM 270 MASTER DRAINAGE STUDY (DS5236A) (RFCD No. 20-12469)

Dear Mr. Kwon:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated January 13, 2020 for above-mentioned project as submitted by WESTWOOD PROFESSIONAL SERVICES. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Department of Public Works dated February 10, 2020.

District concurs with acceptance of this Technical Drainage Study by City of Las Vegas Department of Public Works.

District's review of this project was limited to issues of Regional Flood Control Significance as defined in *Uniform Regulations for the Control of Drainage*.

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by WESTWOOD PROFESSIONAL SERVICES may be superseded. Compliance with regulatory elements and design standards specified in *Uniform Regulations for the Control of Drainage* does not imply a guarantee that properties will be free from flooding or flood damage. The District, its officials, or employees assume no liability for information, data, or conclusions presented by consulting engineers. We, therefore, make no warranties, either expressed or implied, in conducting this review.

STEVEN C. PARRISH, P.E.
General Manager/Chief Engineer

BY: _____
Ching C. Wang, P.E.
Senior Civil Engineer

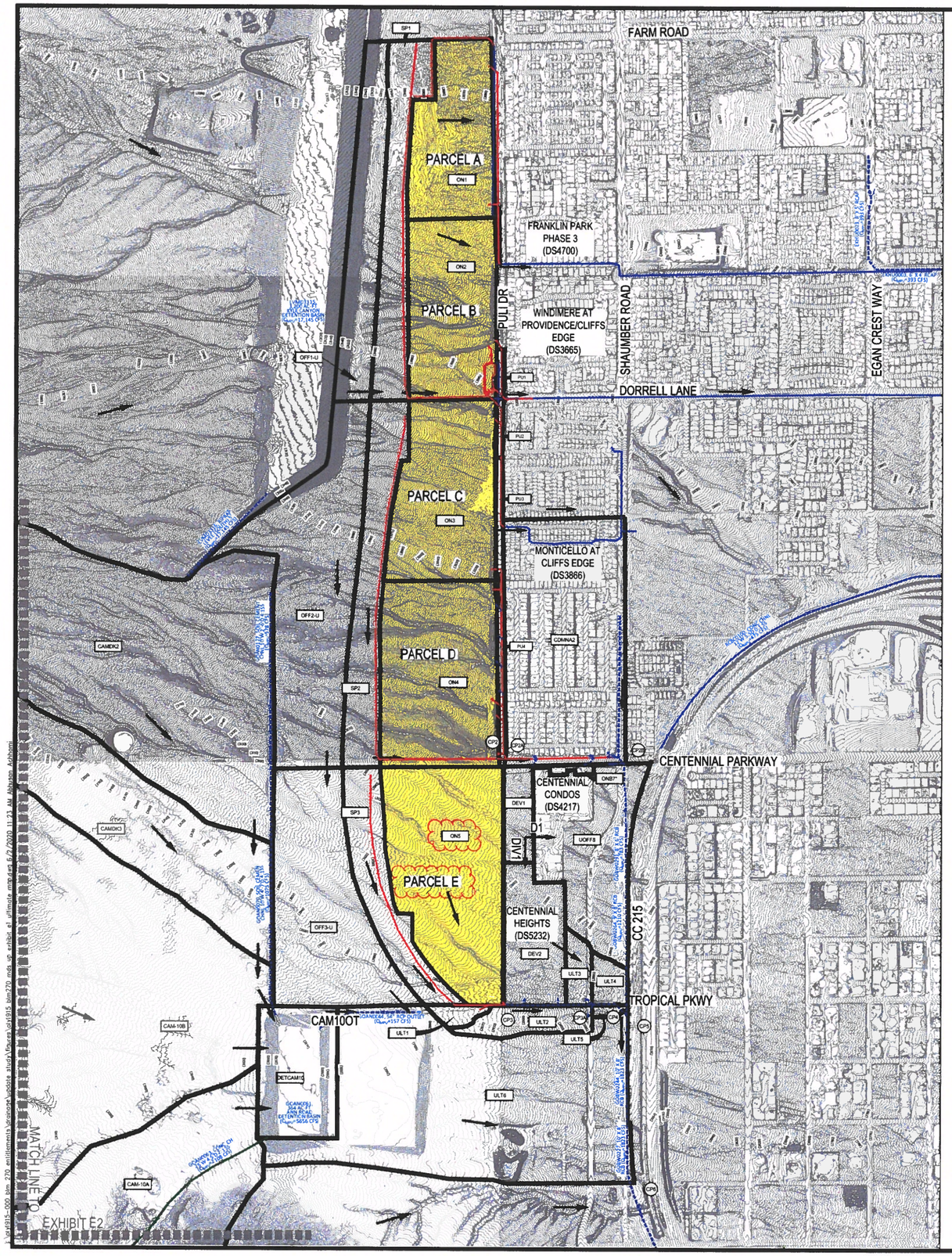
CCW:jb

c: Lant Leavitt, P.E., Westwood Professional Services

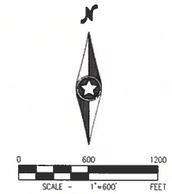
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600 S. Grand Central Parkway, Suite 300 • Las Vegas, Nevada 89106-4511
(702) 685-0000 • FAX: (702) 685-0001
Website: http://www.regionalflood.org

Referenced Drainage Exhibits



Referenced Ultimate Condition



LEGEND

- BASIN BOUNDARY
- EXISTING DRAINAGE FACILITY
- PROPOSED DRAINAGE FACILITY
- PROPOSED DITCH
- FUTURE DRAINAGE FACILITY
- ID — BASIN ID
- PROPOSED DEVELOPMENT PARCEL
- (ID) — CONCENTRATION POINT ID
- FLOW DIRECTION
- ID — FLOWMASTER SECTION
- ID — FACILITY ID

Ultimate Condition Flow Rate Summary

Basin/Concentration Point ID	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
ON1	0.06	53	13
ON2	0.07	121	50
ON3	0.08	155	75
ON4	0.09	187	92
ON5	0.11	193	88
SP1	0.05	87	36
SP2	0.06	96	46
SP3	0.04	77	36
OFF1-U	0.05	115	54
OFF2-U	0.12	254	124
OFF3-U	0.09	199	97
CAMDIK2	0.34	585	274
CAMDIK3	0.32	549	242
CAM-10B	1.81	2734	1255
CAM-10A	1.25	2108	1050
DETCAM10	0.05	80	33
UOFF8	0.07	143	66
PUL1	0.00	4	2
PUL2	0.00	5	2
PUL3	0.00	9	4
PUL4	0.01	12	6
DEV1	0.01	29	14
DEV2	0.04	61	25
ULT1	0.00	11	5
ULT2	0.01	35	17
ULT3	0.01	14	5
ULT4	0.01	13	5
ULT5	0.00	4	2
ULT6	0.21	411	192
ONB7*	0.00	3	2
CDMNA2**	0.13	221	102
CP1 Q = ON2 + SP1 + OFF1-U	0.17	303	130
CP2 Q = ON3 + ON4	0.18	343	167
CP2A Q = CP2 + SP2	0.23	439	213
CP2B Q = CP2A + CDMNA2** + ONB7* + PUL3 + PUL4	0.37	681	326
CP3 Q = SP3 + ON5 + ULT1	0.15	275	127
DIV1*** Flow from DEV1 south thru DEV2	0.01	18	8
D1*** Flow from DEV1 east thru UOFF8	0.01	11	6
CP3A Q = CP3 + DIV1*** + DEV2 + ULT2 + ULT3	0.22	382	171
CP4 Q = CP3A + ULT4 +ULT5	0.23	398	175
CP5 Q = CP2B + CP4 + D1*** + UOFF8	0.67	1171	566
CAM10OT Discharge from Detention Basin	3.76	157	107
CP6 Q = CP5 + CAM10OT + OFF2-U + OFF3-U + ULT6	4.84	1895	1014

*Referenced from Condos Study (DS 4217)
**Referenced from Beltway Study (L-1803)
***Diversion referenced from Townhomes Study (DS 5232)

Westwood
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
Phone (702) 284-5300
Fax (702) 284-5399
westwoodps.com
Westwood Professional Services, Inc.

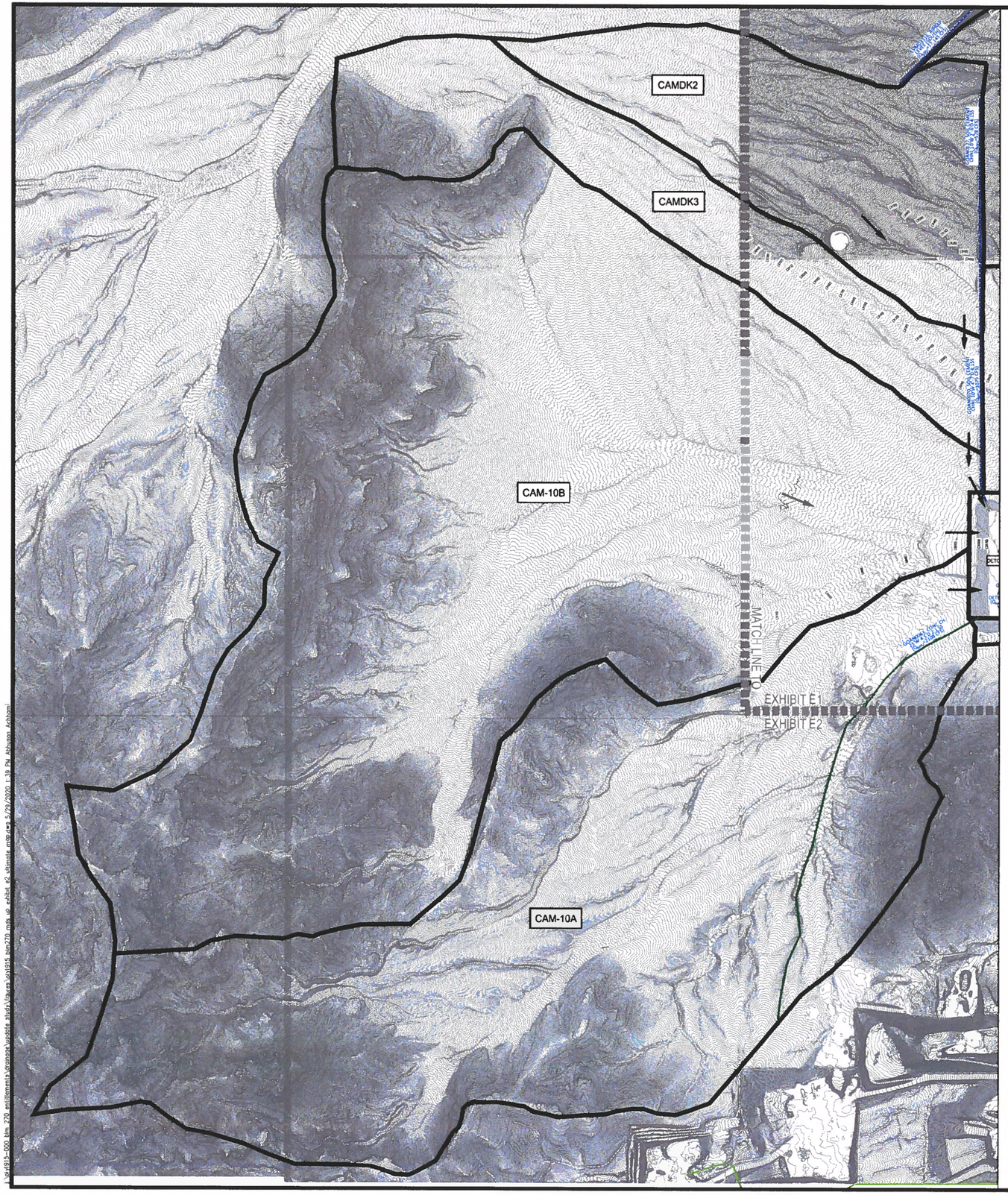
NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

OLYMPIA
BLM 270
ULTIMATE CONDITION HYDROLOGIC MAP

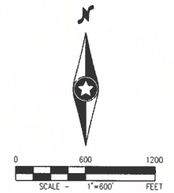
DATE: JUNE 2020
DRAFTER: ARP
DESIGNER: ARP
CHECKED: LL/ARP
PROJECT NO.
OLY1915.000

EXHIBIT E1
SHEET 1 OF 1

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Referenced Ultimate Condition - See Exhibit E1 for Parcel E site



LEGEND

- BASIN BOUNDARY
- EXISTING DRAINAGE FACILITY
- PROPOSED DRAINAGE FACILITY
- FUTURE DRAINAGE FACILITY
- ID — BASIN ID
- PROPOSED DEVELOPMENT PARCEL
- (ID) — CONCENTRATION POINT ID
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- (ID) — FLOWMASTER SECTION
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*Referenced from Condos Study (DS 4217)
**Referenced from Beltway Study (L-1803)
***Diversion referenced from Townhomes Study (DS 5232)

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Fax (702) 284-5399
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Las Vegas, NV 89118
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP DATE	APP
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OLYMPIA
BLM 270
ULTIMATE CONDITION HYDROLOGIC MAP

DATE: JUNE 2020
DRAFTER: ARP
DESIGNER: ARP
CHECKED: LL/ARP
PROJECT NO.
OLY1915.000

EXHIBIT E2
SHEET 1 OF 1

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Referenced Report Excerpts

Westwood

BLM 270

Update No. 1 to the Master Drainage Study

City of Las Vegas, NV

Prepared For:

190 Octane FT Partners, LLC
c/o Mr. Marc Bolduc
11411 Southern Highlands Pkwy, Suite 300
Las Vegas, NV 89141
Phone: 702-220-6565 ▪ Fax: 702-220-6566

Prepared By:

Westwood Professional Services
5740 S. Arville Street, Suite 216
Las Vegas, NV 89118
Phone: (702) 284-5300
Fax: (702) 284-5339



6-3-20

Project Number: OLY1915
Date: June 2020

Amy Poechmann, P.E.
NV Professional Engineer No. 18320
Assisted by: Abhusan Achhami

4.3 Summary of Proposed Condition Flows

A summary of proposed condition flowrates, as determined by the analyzed and referenced basin flowrates is presented in a table on both Exhibit D1 and D2. Refer to Appendix A for Exhibits D1 and D2 and to Appendix C for the proposed condition HEC-1 model. Relevant hydrologic data for the referenced basins is provided in the appendix of the appropriate reference study.

5 Ultimate Drainage Condition

5.1 Definition of Ultimate Condition

The ultimate condition considers the BLM 270 site fully developed as per the approved Master Drainage Study. The upstream watershed is considered fully developed as well.

The ultimate condition of this study generally matches the ultimate condition presented in the MDS, but with a few key differences.

- The analysis extends south of Tropical Parkway to take into account flows from south of Tropical Parkway which impact the Tropical storm drain as in the proposed condition presented with this study.
- Sheep Mountain Parkway is considered developed, but the flows from Sheep Mountain Parkway and the offsite area to the west are not routed east in Tropical Parkway as in the MDS. Instead, the area west of Sheep Mountain Parkway is routed generally southeast along the Sheep Mountain Parkway alignment and is routed into the Beltway facility south of Tropical Parkway.

5.2 Discussion of Ultimate Condition

Refer to Exhibits E1 and E2, included in Appendix A, for a detailed illustration of the ultimate condition drainage patterns showing the drainage basins impacting the project site.

The ultimate condition considers the BLM 270 Parcels C thru E developed and also considers the upstream offsite watershed to the west developed with Sheep Mountain Parkway in place. Flows discharged from the proposed development parcels are proposed to be conveyed south and east in existing and proposed storm drain facilities. Storm drain infrastructure is proposed in roadway alignments and stubbed out into the future onsite parcels to provide for discharging 100-year flows from future onsite parcel development.

Based on coordination with Horrocks on the design for Sheep Mountain Parkway, only about half of the Sheep Mountain Parkway flows will be directed east into Centennial Parkway and Tropical Parkway. However, it is conservatively assumed that the entire Sheep Mountain Parkway flows will be directed east. This also allows the ultimate condition to reference the SP2 and SP3 basins for Sheep Mountain Parkway from the MDS. Basin SP2 flows are routed east in Centennial Parkway and Basin SP3 flows are routed east in Tropical Parkway. The Sheep Mountain Parkway flows are less than the offsite flows (IOFF2 and IOFF3, respectively) that were previously directed to Centennial Parkway and Tropical Parkway, respectively. Therefore, the ultimate condition flow rates to both Centennial Parkway and Tropical Parkway are reduced from the proposed to the ultimate condition.

Please note that MDS Basins OFF2-U and OFF3-U as well as the detention basin outflow (CAM10OT in the ultimate condition) have been re-routed in the ultimate condition compared to the MDS. These flows are directed southwest along the Sheep Mountain Parkway corridor and

do not impact the Tropical storm drain system. Instead, the flows impact the beltway facility directly at concentration point CP6.

The INT1 thru INT6 basins from the proposed condition have been updated to the ULT1 thru ULT6 basins in the ultimate condition. Basins ULT1, ULT2 and ULT6 have been modified slightly due to the Sheep Mountain Parkway alignment and to account for full development of the offsite area. The rest of the basins have area and basin parameters which remained to be the same, but the curve numbers have been updated to reflect full offsite development. Please note that the land uses for the ultimate condition are taken from the 2018 MPU.

5.3 Summary of Ultimate Condition Flows

A summary of ultimate condition flowrates, as determined by the analyzed and referenced basin flowrates is presented in a table on Exhibits E1 and E2. Refer to Appendix A for Exhibit E1 and to Appendix C for the ultimate condition HEC-1 model. Relevant hydrologic data for the referenced basins is provided in the appendix of the appropriate reference study.

6 Flow Rate Comparison

Table 1 below summarizes the revised ultimate condition flow rates from the MDS and this update study in comparison to the existing condition flow rates at the same locations. Please note that the hydrology for the area north of Dorrell Lane was not revised with this update so is not included in the table below.

TABLE 1: COMPARISON OF 100-YEAR FLOW RATES

Location	Existing Q_{100} (cfs)	MDS Ultimate Q100 (cfs)	This Study Proposed Q100 (cfs)	This Study Ultimate Q100 (cfs)
Centennial Pkwy / Puli Dr	63	343 (CP2)	343 (CP2) 503 (CP2A)	343 (CP2) 439 (CP2A)
Centennial Pkwy/ Shaumber Rd	814	N/A	745 (CP2B)	681 (CP2B)
Tropical Pkwy / Puli Dr	506	744 (CP3)	468 (CP3)	275 (CP3)

As shown in the table above, the proposed condition generates the highest flow rates for this study. This is because the future Sheep Mountain Parkway improvements are assumed to cutoff the offsite flows to the west and route them south past Tropical Parkway in the ultimate condition. However, the proposed infrastructure for Centennial Parkway and Tropical Parkway will be designed using the higher proposed condition flow rates.

More flow is routed to Centennial Parkway than in the MDS in which no offsite flow entered Centennial Parkway from west of the project site. This reduces the flow impacting Tropical Parkway since the offsite flows west of BLM 270 between Dorrell Lane and Centennial Parkway no longer impact Tropical Parkway.

Referenced Hydrologic Computations

```
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*           VERSION 4.1                *
*                                      *
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*                                      *
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*                                    *
*   U.S. ARMY CORPS OF ENGINEERS     *
*   HYDROLOGIC ENGINEERING CENTER    *
*        609 SECOND STREET           *
*      DAVIS, CALIFORNIA 95616       *
*          (916) 756-1104            *
*                                    *
**************************************
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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
```

Referenced Ultimate Condition

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

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

*** FREE ***
                       *DIAGRAM
             1         ID     WESTWOOD PROFESSIONAL SERVICES
             2         ID     BLM 270 - MDS UPDATE
             3         ID     OLYMPIA
             4         ID     REVISED ULTIMATE CONDITION
             5         ID
             6         ID          AREA    DARF
             7         ID          SQ.MI.
             8         ID                  SDN 3   SDN 3
             9         ID                  100-YR  10-YR
            10         ID          0 - 0.5 1.00
            11         ID          0.5 - 1 0.975
            12         ID          1 - 2   0.95
            13         ID          2 - 3   0.925
            14         ID          3 - 4   0.915
            15         ID          4 - 5   0.908
            16         ID                          0.55
            17         ID
            18         IT       5       0       0     650
            19         IO       5       0       0
            20         IN       5       0       0
            21         JR    PREC    1.00   0.975    0.95   0.925   0.915   0.908    0.55
                       *
                       *

            22         KK     ON1
            23         BA  0.0620
            24         PB    3.15
            25         PC       0   0.020   0.057   0.070   0.087   0.108   0.124   0.130   0.130   0.130
            26         PC   0.130   0.130   0.130   0.133   0.140   0.142   0.148   0.158   0.172   0.181
            27         PC   0.190   0.197   0.199   0.200   0.201   0.204   0.214   0.229   0.241   0.249
            28         PC   0.251   0.256   0.270   0.278   0.281   0.283   0.295   0.322   0.352   0.409
            29         PC   0.499   0.590   0.710   0.744   0.781   0.812   0.819   0.835   0.851   0.856
            30         PC   0.860   0.868   0.876   0.888   0.910   0.926   0.937   0.950   0.970   0.976
            31         PC   0.982   0.985   0.987   0.989   0.990   0.993   0.993   0.994   0.995   0.998
            32         PC   0.998   0.999       1
            33         LS       0    76.4
            34         UD   0.212
                       *

            35         KK     ON2
            36         BA  0.0718
            37         LS       0    89.0
            38         UD   0.147
                       *

            39         KK     SP1
            40         BA  0.0504
            41         LS       0    89.1
            42         UD   0.135
```

```
                *
1                                        HEC-1 INPUT                                                    PAGE  2

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

   43         KK  OFF1-U
   44         BA  0.0484
   45         LS       0    92.7
   46         UD   0.056
                *
   47         KK    CSP1
   48         HC       2
                *
   49         KK     CP1
   50         HC       2
                *
   51         KK    DCP1
   52         KM  10-YR FLOW BYPASSES PEAKING BASIN
   53         KM  FLOW IN EXCESS OF 150 CFS ENTERS PEAKING BASIN
   54         DT   BYCP1
   55         DI       0     150    1000
   56         DQ       0     150     150
                *
   57         KK   CP1PB
   58         KM  PROPOSED LOCAL PEAKING BASIN AT DORRELL LN
   59         KM  MITIGATE FLOW INCREASE FROM PROPOSED DEVELOPMENT
   60         RS       1    STOR      -1
   61         SV       0    0.27    0.69    1.26    3.01    2.94    2.95
   62         SE  3027.0  3029.0  3031.0  3033.0  3035.0  3037.0  3040.0
   63         SQ    0.00   10.00   11.00   12.00   13.00   14.00 1000.00
                *
   64         KK   BYCP1
   65         DR   BYCP1
                *
   66         KK    CP1B
   67         KM  COMBINE 150 CFS BYPASS FLOW AND DORRELL DB OUTFLOW
   68         HC       2
                *
   69         KK    DIV2
   70         KM  FLOW BEING CONVEYED DOWN DORRELL
   71         DT    DORR
   72         DI       0      33    1000
   73         DQ       0      33      33
                *
   74         KK    DORR
   75         KM   FLOW BEING CONVEYED DOWN DORRELL
   76         DR    DORR
                *
1                                        HEC-1 INPUT                                                    PAGE  3

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

   77         KK     ON3
   78         BA  0.0813
   79         LS       0    94.0
   80         UD   0.160
                *
   81         KK     ON4
   82         BA  0.0948
   83         LS       0    94.0
   84         UD   0.124
                *
   85         KK     CP2
   86         HC       2
                *
   87         KK     SP2
   88         BA  0.0551
   89         LS       0    94.0
   90         UD   0.201
                *
   91         KK    CP2A
   92         HC       2
                *
   93         KK  CDMNA2
```

```
 94          KM   REFERENCED FROM BELTWAY FACILITY
 95          BA   0.125
 96          PB    3.18
 97          LS       0    92.8
 98          UD   0.188
             *

 99          KK    ONB7
100          KM   REFERENCED FROM CENTENNIAL CONDOS
101          BA  0.0016
102          PB    3.05
103          LS       0    93.0
104          UD   0.075
             *

105          KK    PUL3
106          PB    3.15
107          BA  0.0039
108          LS       0    94.0
109          UD   0.087
             *
```



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

110          KK    PUL4
111          BA  0.0059
112          LS       0    94.0
113          UD   0.121
             *

114          KK    CP2B
115          HC       5
             *

116          KK     ON5
117          BA  0.1055
118          LS       0    92.0
119          UD   0.154
             *

120          KK     SP3
121          BA  0.0407
122          LS       0    92.5
123          UD   0.144
             *

124          KK    ULT1
125          BA  0.0043
126          LS       0    94.0
127          UD   0.050
             *

128          KK     CP3
129          HC       3
             *

130          KK    DEV1
131          BA  0.0124
132          LS       0    94.0
133          UD   0.068
             *

134          KK    DIV1
135          KM   REFERENCED FROM HORROCKS FOR DIV1 FLOWS
136          KM   D1 IS CAPTURED IN ONSITE DROP INLET FOR HORROCKS AND ROUTED EAST
137          KM   DIV1 IS ROUTED SOUTH TOWARD TROPICAL PARKWAY
138          DT      D1
139          DI      14      29
140          DQ       6      11
             *

141          KK    DEV2
142          BA  0.0363
143          LS       0    87.9
144          UD   0.108
             *
```



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

145          KK    ULT2
146          BA  0.0149
147          LS       0    94.0
148          UD   0.065
             *
```

Parcel E Basin

```
149          KK    ULT3
150          BA  0.0078
151          LS       0    84.0
152          UD   0.061
             *

153          KK    CP3A
154          HC       5
             *

155          KK    ULT4
156          BA  0.0072
157          LS       0    84.0
158          UD   0.060
             *

159          KK    ULT5
160          BA  0.0016
161          LS       0    91.1
162          UD   0.050
             *

163          KK     CP4
164          HC       3
             *

165          KK   UOFF8
166          BA  0.0697
167          LS       0    92.1
168          UD   0.091
             *

169          KK      D1
170          KM   FLOW ROUTED EAST FROM DEV1
171          DR      D1
             *

172          KK     CP5
173          HC       4
             *

174          KK  CAMDK2
175          BA   0.343
176          PB    3.28
177          LS       0    92.6
178          UD   0.212
             *
```



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

179          KK RCAMDK2
180          KM  ROUTE CAMDK2 TO CAMDK3 ALONG COLLECTOR DIKE
181          KM  FACILITY = GOWAN ANN ROAD DETENTION BASIN FACILITIES
182          KM  FACILITY # = GOAN 0065, 0067, 0068, 0070
183          KM  LINING = SOIL CEMENT
184          RD    1860    0.03   0.025       0    TRAP      10       4
             *

185          KK  CAMDK3
186          BA   0.316
187          PB    3.32
188          LS       0    90.9
189          UD   0.193
             *

190          KK CCAMDK3
191          KM  COMBINE RCAMDK2 AND CAMDK3
192          HC       2
             *

193          KK CAM-10A
194          BA   1.246
195          PB    3.41
196          LS       0    92.6
197          UD   0.210
             *

198          KK CAM-10B
199          BA   1.809
200          PB    3.39
201          LS       0    89.3
202          UD   0.211
             *

203          KKDETCAM10
204          BA   0.046
205          PB   3.294
```

```
206          LS       0    87.9
207          UD   0.140
             *

208          KK CAM10IN
209          KM  COMBINE CCAMDK3, CAM-10A, CAM-10B AND DETCAM10
210          KM  TOTAL INFLOW TO CAM10 DETENTION BASIN
211          HC       4
             *

212          KK CAM10DB
213          KM  FACILITY = GOWAN ANN ROAD DETENTION BASIN FACILITIES
214          KM  FACILITY # = GOAN 0061,0062
215          KM  CLEAR WATER STORAGE REQUIRED = 400.4 AC-FT
216          KM  SEDIMENTATION VOLUME REQUIRED = 38.5 AC-FT
217          KM  TOTAL VOLUME = 438.9 AC-FT
218          KM  VOLUME TO BE INCREASE BY 74.9 AC-FT
1                                        HEC-1 INPUT                                                    PAGE  7

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

219          KM  OUTLET = 33" ORIFICE WITH 54" RCP
220          KM  100-YEAR DISCHARGE = 157 CFS
221          KM  SPILLWAY LENGTH = 1360 FT
222          KM  SPILLWAY HEIGHT = 27.7 FT
223          KM  SPILLWAY CREST ELEVATION = 3000'
224          KM  SPILLWAY TYPE =
225          KM  PMF DISCHARGE = 24,614 CFS
226          KM  TOP OF EMBANKMENT ELEVATION = 3004.5'
227          KM  INFORMATION TAKEN FROM "ANN ROAD (CAM-10) DETENTION BASIN PLANS"
228          KM  BY THE LOUIS BERGER GROUP (5-05)
229          RS       1    STOR      -1
             * 0       0       0       0.67    3.33    8.33    26.67   43.33   110     200
             * 280     347.2   364     396
230          SV       0       0       0    0.74    3.66    9.16   29.34   47.66  121.00     220
231          SV  308.00  381.92  400.40  435.60
232          SE  2972.6  2973.8  2974.5  2975.0  2976.0  2976.7  2978.8  2980.0  2985.0  2990.0
233          SE  2995.0  2999.0  3000.0  3003.4
234          SQ    0.00    6.67   17.78   27.78   45.56   54.44   64.44   82.22   93.33  117.78
235          SQ  138.39  156.00  160.40   24614
             *

236          KK CAM10OT
237          KM  ROUTE CAM10DB TO CCEFPOA1
238          KM  FACILITY = GOWAN ANN ROAD DETENTION BASIN FACILITIES
239          KM  FACILITY # = GOAN 0000, 0044
240          KM  LINING = RCP
241          RD    3442  0.0258   0.013       0    CIRC     4.5       0
             *

242          KK  OFF2-U
243          PB    3.15
244          BA  0.1155
245          LS       0    94.0
246          UD   0.086
             *

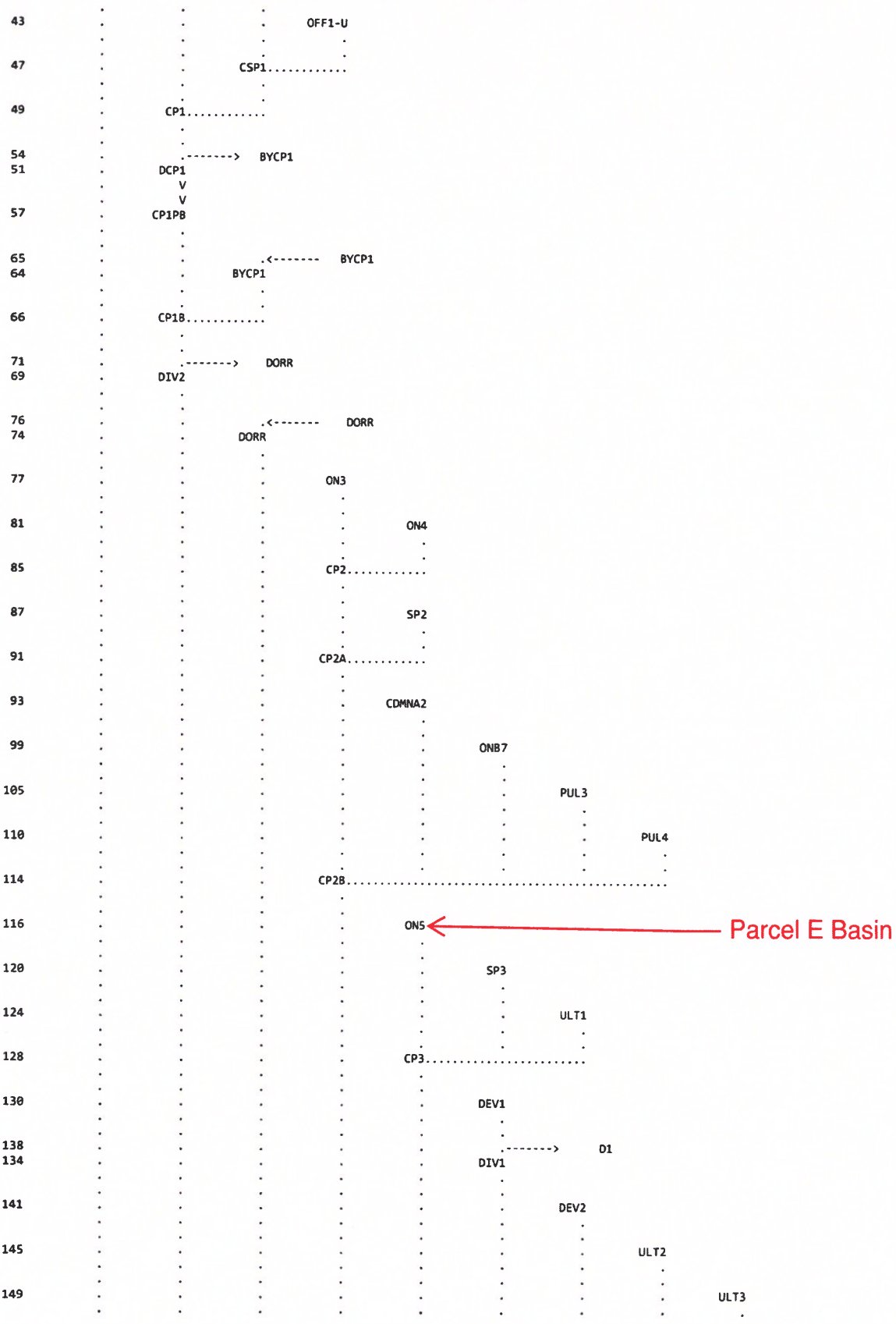
247          KK  OFF3-U
248          BA  0.0867
249          LS       0    94.0
250          UD   0.074
             *

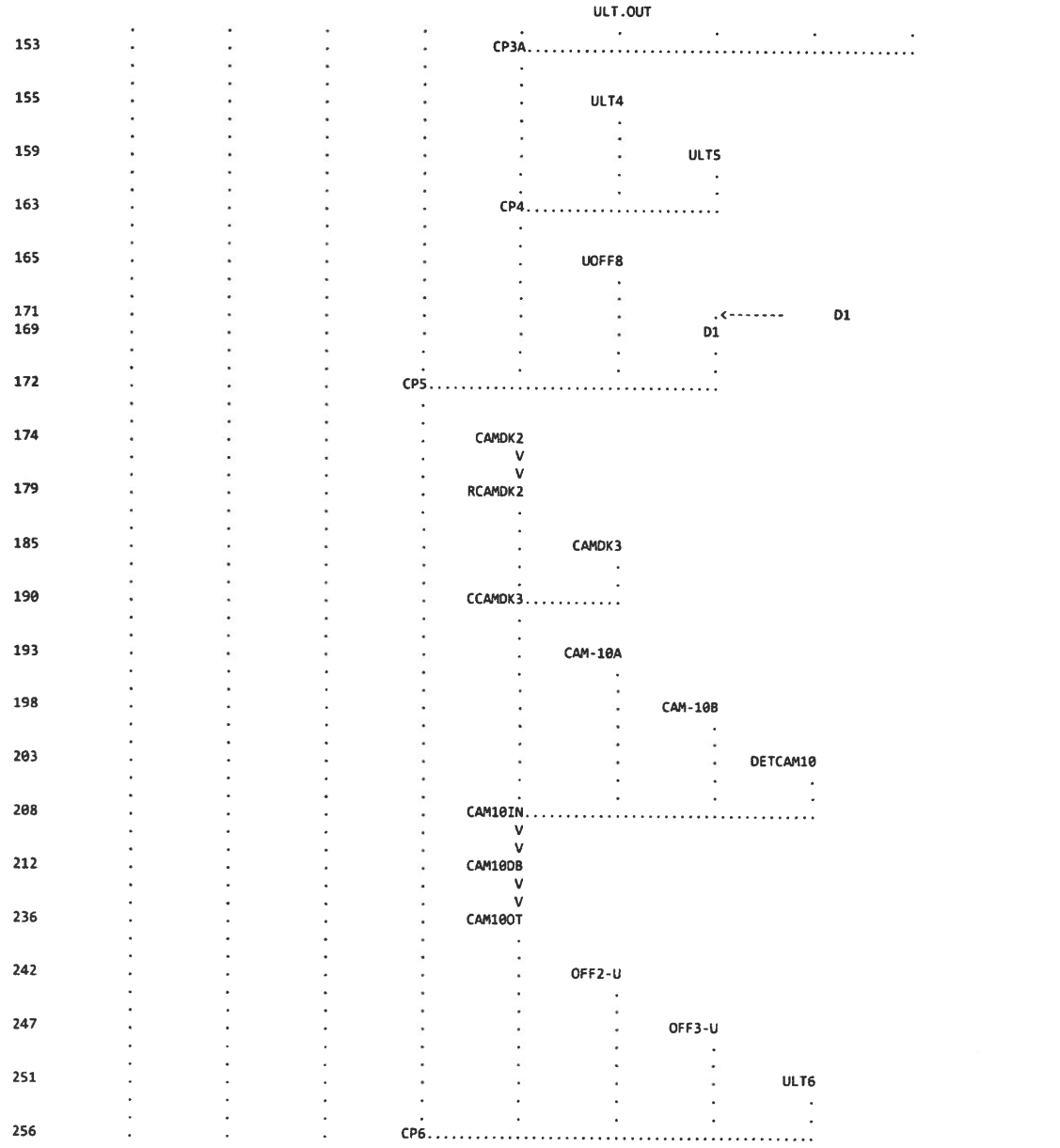
251          KK    ULT6
252          PB    3.15
253          BA  0.2069
254          LS       0    93.1
255          UD   0.109
             *

256          KK     CP6
257          HC       5
             *
258          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE     (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

     22        ON1
               .
               .
     35        .         ON2
               .           .
               .           .
     39        .           .         SP1
               .           .           .
```


43
OFF1-U
47
CSP1
49
CP1
54
BYCP1
51
DCP1
57
CP1PB
65
BYCP1
64
BYCP1
66
CP1B
71
DORR
69
DIV2
76
DORR
74
DORR
77
ON3
81
ON4
85
CP2
87
SP2
91
CP2A
93
CDMNA2
99
ONB7
105
PUL3
110
PUL4
114
CP2B
116
ON5
Parcel E Basin
120
SP3
124
ULT1
128
CP3
130
DEV1
138
D1
134
DIV1
141
DEV2
145
ULT2
149
ULT3



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *              JUN   1998               *
 *           VERSION 4.1                 *
 *                                       *
 *  RUN DATE   27MAY20  TIME  15:45:11   *
 *                                       *
 *****************************************
```

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

WESTWOOD PROFESSIONAL SERVICES
BLM 270 - MDS UPDATE
OLYMPIA
REVISED ULTIMATE CONDITION

AREA SQ.MI.	DARF SDN 3 100-YR	SDN 3 10-YR
0 - 0.5	1.00	

```
                          0.5 - 1 0.975
                          1 - 2   0.95
                          2 - 3   0.925
                          3 - 4   0.915
                          4 - 5   0.908
                                          0.55


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

     IT        HYDROGRAPH TIME DATA
                     NMIN          5  MINUTES IN COMPUTATION INTERVAL
                    IDATE      1   0  STARTING DATE
                    ITIME       0000  STARTING TIME
                       NQ        650  NUMBER OF HYDROGRAPH ORDINATES
                   NDDATE      3   0  ENDING DATE
                   NDTIME       0605  ENDING TIME
                    ICENT         19  CENTURY MARK

                 COMPUTATION INTERVAL      .08 HOURS
                     TOTAL TIME BASE    54.08 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
                  1.00       .98       .95       .93       .92       .91       .55
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


                                                                    RATIOS APPLIED TO PRECIPITATION
 OPERATION       STATION     AREA    PLAN              RATIO 1  RATIO 2  RATIO 3  RATIO 4  RATIO 5  RATIO 6  RATIO 7
                                                         1.00      .98      .95      .93      .92      .91      .55

 HYDROGRAPH AT
+                  ON1        .06     1   FLOW           53.      51.      48.      46.      45.      44.      13.
                                           TIME          3.67     3.67     3.67     3.67     3.67     3.67     3.67

 HYDROGRAPH AT
+                  ON2        .07     1   FLOW          121.     117.     113.     109.     108.     106.      50.
                                           TIME          3.58     3.58     3.58     3.58     3.58     3.58     3.58

 HYDROGRAPH AT
+                  SP1        .05     1   FLOW           87.      84.      81.      78.      77.      76.      36.
                                           TIME          3.58     3.58     3.58     3.58     3.58     3.58     3.58

 HYDROGRAPH AT
+                OFF1-U       .05     1   FLOW          115.     111.     108.     105.     103.     102.      54.
                                           TIME          3.50     3.50     3.50     3.50     3.50     3.50     3.50

   2 COMBINED AT
+                  CSP1       .10     1   FLOW          195.     189.     183.     177.     174.     172.      87.
                                           TIME          3.50     3.50     3.50     3.50     3.50     3.50     3.50

   2 COMBINED AT
+                  CP1        .17     1   FLOW          303.     293.     284.     274.     270.     267.     130.
                                           TIME          3.50     3.50     3.50     3.50     3.50     3.50     3.50

 DIVERSION TO
+                BYCP1        .17     1   FLOW          150.     150.     150.     150.     150.     150.     130.
                                           TIME          3.33     3.33     3.33     3.42     3.42     3.42     3.50

 HYDROGRAPH AT
+                  DCP1       .17     1   FLOW          153.     143.     134.     124.     120.     117.       0.
                                           TIME          3.50     3.50     3.50     3.50     3.50     3.50      .00

 ROUTED TO
+                CP1PB        .17     1   FLOW           13.      13.      13.      12.      12.      12.       0.
                                           TIME          3.75     3.75     3.75     3.75     3.75     3.75      .00

                                    ** PEAK STAGES IN FEET **
                                    1   STAGE      3034.66  3034.35  3034.04  3033.76  3033.66  3033.59  3027.00
```

				TIME	3.75	3.75	3.75	3.75	3.75	3.75	.00
HYDROGRAPH AT												
+	BYCP1	.00	1	FLOW	150.	150.	150.	150.	150.	150.	130.
				TIME	3.33	3.33	3.33	3.42	3.42	3.42	3.50
2 COMBINED AT												
+	CP1B	.17	1	FLOW	163.	163.	163.	162.	162.	162.	130.
				TIME	3.75	3.75	3.75	3.75	3.67	3.67	3.50
DIVERSION TO												
+	DORR	.17	1	FLOW	33.	33.	33.	33.	33.	33.	33.
				TIME	3.08	3.08	3.17	3.17	3.17	3.17	3.25
HYDROGRAPH AT												
+	DIV2	.17	1	FLOW	130.	130.	130.	129.	129.	129.	97.
				TIME	3.75	3.75	3.75	3.75	3.67	3.67	3.50
HYDROGRAPH AT												
+	DORR	.00	1	FLOW	33.	33.	33.	33.	33.	33.	33.
				TIME	3.08	3.08	3.17	3.17	3.17	3.17	3.25
HYDROGRAPH AT												
+	ON3	.08	1	FLOW	155.	151.	146.	142.	140.	139.	75.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	ON4	.09	1	FLOW	187.	182.	177.	172.	169.	168.	92.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT												
+	CP2	.18	1	FLOW	343.	333.	323.	313.	310.	307.	167.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	SP2	.06	1	FLOW	96.	93.	91.	88.	87.	86.	46.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT												
+	CP2A	.23	1	FLOW	439.	426.	414.	401.	396.	393.	213.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	CDMNA2	.13	1	FLOW	221.	214.	207.	201.	198.	196.	102.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	ONB7	.00	1	FLOW	3.	3.	3.	3.	3.	3.	2.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT												
+	PUL3	.00	1	FLOW	9.	8.	8.	8.	8.	8.	4.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT												
+	PUL4	.01	1	FLOW	12.	11.	11.	11.	11.	10.	6.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
5 COMBINED AT												
+	CP2B	.37	1	FLOW	681.	661.	642.	622.	614.	609.	326.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	ON5	.11	1	FLOW	193.	187.	181.	175.	173.	171.	88.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	SP3	.04	1	FLOW	77.	74.	72.	70.	69.	68.	36.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	ULT1	.00	1	FLOW	11.	10.	10.	10.	10.	10.	5.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
3 COMBINED AT												
+	CP3	.15	1	FLOW	275.	267.	259.	250.	247.	245.	127.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT												
+	DEV1	.01	1	FLOW	29.	28.	27.	27.	26.	26.	14.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
DIVERSION TO												
+	D1	.01	1	FLOW	11.	11.	10.	10.	10.	10.	6.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT												
+	DIV1	.01	1	FLOW	18.	17.	17.	16.	16.	16.	8.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50

Parcel E Basin

HYDROGRAPH AT											
+	DEV2	.04	1	FLOW	61.	59.	57.	55.	54.	53.	25.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.58
HYDROGRAPH AT											
+	ULT2	.01	1	FLOW	35.	34.	33.	32.	32.	32.	17.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT											
+	ULT3	.01	1	FLOW	14.	13.	13.	12.	12.	12.	5.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
5 COMBINED AT											
+	CP3A	.22	1	FLOW	382.	370.	358.	346.	342.	338.	171.
				TIME	3.50	3.50	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	ULT4	.01	1	FLOW	13.	12.	12.	11.	11.	11.	5.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT											
+	ULT5	.00	1	FLOW	4.	4.	3.	3.	3.	3.	2.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
3 COMBINED AT											
+	CP4	.23	1	FLOW	398.	386.	373.	361.	355.	352.	175.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.58
HYDROGRAPH AT											
+	UOFF8	.07	1	FLOW	143.	139.	135.	131.	129.	128.	66.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
HYDROGRAPH AT											
+	D1	.00	1	FLOW	11.	11.	10.	10.	10.	10.	6.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50
4 COMBINED AT											
+	CPS	.67	1	FLOW	1206.	1171.	1135.	1100.	1086.	1076.	566.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
HYDROGRAPH AT											
+	CAMDK2	.34	1	FLOW	585.	568.	550.	533.	526.	521.	274.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67
ROUTED TO											
+	RCAMDK2	.34	1	FLOW	584.	567.	549.	532.	527.	520.	272.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	CAMDK3	.32	1	FLOW	549.	532.	515.	497.	491.	486.	242.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
2 COMBINED AT											
+	CCAMDK3	.66	1	FLOW	1108.	1075.	1041.	1007.	996.	984.	509.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	CAM-10A	1.25	1	FLOW	2241.	2174.	2108.	2041.	2015.	1996.	1050.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67
HYDROGRAPH AT											
+	CAM-10B	1.81	1	FLOW	2921.	2828.	2734.	2640.	2603.	2577.	1255.
				TIME	3.67	3.67	3.67	3.67	3.67	3.67	3.67
HYDROGRAPH AT											
+	DETCAM10	.05	1	FLOW	80.	78.	75.	72.	71.	70.	33.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.58
4 COMBINED AT											
+	CAM10IN	3.76	1	FLOW	6333.	6135.	5936.	5736.	5656.	5600.	2841.
				TIME	3.58	3.58	3.58	3.58	3.58	3.58	3.67
ROUTED TO											
+	CAM10DB	3.76	1	FLOW	1696.	1399.	538.	158.	157.	156.	107.
				TIME	4.92	5.08	5.33	5.58	5.58	5.58	5.58
			** PEAK STAGES IN FEET **								
			1	STAGE	3000.21	3000.17	3000.05	2999.46	2999.14	2998.92	2987.88
				TIME	4.92	5.08	5.33	5.58	5.58	5.58	5.58
ROUTED TO											
+	CAM10OT	3.76	1	FLOW	1264.	1087.	435.	158.	157.	156.	107.
				TIME	4.92	5.08	5.33	5.67	5.67	5.67	5.58
HYDROGRAPH AT											
+	OFF2-U	.12	1	FLOW	254.	247.	240.	232.	230.	227.	124.
				TIME	3.50	3.50	3.50	3.50	3.50	3.50	3.50

```
 HYDROGRAPH AT
+                OFF3-U       .09     1   FLOW         199.     193.     187.     182.     179.     178.      97.
                                          TIME         3.50     3.50     3.50     3.50     3.50     3.50     3.50

 HYDROGRAPH AT
+                  ULT6       .21     1   FLOW         411.     398.     386.     374.     369.     366.     192.
                                          TIME         3.50     3.50     3.50     3.50     3.50     3.50     3.50

  5 COMBINED AT
+                   CP6      4.84     1   FLOW        2119.    2058.    1997.    1936.    1912.    1895.    1014.
                                          TIME         3.50     3.50     3.50     3.50     3.50     3.50     3.58
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
           RCAMDK2  MANE         2.07    588.59    219.40      2.48      5.00    584.49    220.00        2.48

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4544E+02 EXCESS= .0000E+00 OUTFLOW= .4544E+02 BASIN STORAGE= .8298E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCAMDK2  MANE         2.09    572.57    219.22      2.41      5.00    566.83    220.00        2.40

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4401E+02 EXCESS= .0000E+00 OUTFLOW= .4401E+02 BASIN STORAGE= .8683E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCAMDK2  MANE         2.11    555.22    219.09      2.33      5.00    549.04    220.00        2.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4257E+02 EXCESS= .0000E+00 OUTFLOW= .4258E+02 BASIN STORAGE= .9357E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCAMDK2  MANE         2.13    537.55    218.99      2.25      5.00    531.51    220.00        2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4114E+02 EXCESS= .0000E+00 OUTFLOW= .4114E+02 BASIN STORAGE= .9540E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCAMDK2  MANE         2.13    527.84    219.82      2.22      5.00    526.90    220.00        2.22

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4057E+02 EXCESS= .0000E+00 OUTFLOW= .4057E+02 BASIN STORAGE= .1009E-02 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCAMDK2  MANE         2.14    523.89    218.27      2.20      5.00    519.70    220.00        2.20

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4017E+02 EXCESS= .0000E+00 OUTFLOW= .4017E+02 BASIN STORAGE= .8367E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           RCAMDK2  MANE         2.57    272.49    218.61      1.11      5.00    272.49    220.00        1.10

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2023E+02 EXCESS= .0000E+00 OUTFLOW= .2023E+02 BASIN STORAGE= .9803E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           CAM10OT  MANE         1.55   1617.49    296.70      2.41      5.00   1264.49    295.00        2.41

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4840E+03 EXCESS= .0000E+00 OUTFLOW= .4840E+03 BASIN STORAGE= .2784E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           CAM10OT  MANE         1.61   1318.62    306.74      2.33      5.00   1086.59    305.00        2.33

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4679E+03 EXCESS= .0000E+00 OUTFLOW= .4679E+03 BASIN STORAGE= .5500E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           CAM10OT  MANE         1.95    493.98    322.52      2.25      5.00    434.55    320.00        2.25

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4520E+03 EXCESS= .0000E+00 OUTFLOW= .4520E+03 BASIN STORAGE= .3243E-03 PERCENT ERROR=    .0
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          FOR PLAN = 1  RATIO=  .00
           CAM10OT  MANE         2.50    158.03    339.59      2.18      5.00    158.03    340.00        2.18

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4362E+03 EXCESS= .0000E+00 OUTFLOW= .4362E+03 BASIN STORAGE= .5951E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           CAM10OT  MANE         2.50    156.62    340.20      2.14      5.00    156.62    340.00        2.14

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4300E+03 EXCESS= .0000E+00 OUTFLOW= .4300E+03 BASIN STORAGE= .5580E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           CAM10OT  MANE         2.50    155.64    340.63      2.12      5.00    155.64    340.00        2.12

CONTINUITY SUMMARY (AC-FT) - INFLOW= .4255E+03 EXCESS= .0000E+00 OUTFLOW= .4255E+03 BASIN STORAGE= .5886E-03 PERCENT ERROR=    .0

          FOR PLAN = 1  RATIO=  .00
           CAM10OT  MANE         2.70    107.42    337.17      1.03      5.00    107.42    335.00        1.03

CONTINUITY SUMMARY (AC-FT) - INFLOW= .2072E+03 EXCESS= .0000E+00 OUTFLOW= .2072E+03 BASIN STORAGE= .4039E-03 PERCENT ERROR=    .0



*** NORMAL END OF HEC-1 ***
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APPENDIX C

Reference Material

Technical Drainage Study for Centennial Heights Townhomes

By Horrocks Engineers (DS5232)

Approval Letter

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: June 29, 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:		**COPIES TO:**
Centennial Heights Townhomes			Horrocks Engineers
Cross Streets:	SWQ of Centennial Pkwy & Shaumber Road		Harmony Homes, LLC
File Number:	F:\Depot\DSMemos\DS5232D.doc		Bart Anderson, P.E., DevCo
Parcel Number:	126-25-201-010		CCRFCD
Zoning Action:	TMP-77575; VAC-77574; VAR-77573 & ZON-77572		
FEMA Flood Zone	YES	NO X	
Proposed Storm Drain	YES X	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	12/30/2019	1/31/2019	Not Approved	$400.00	3688174: $400
2nd Submittal	3/12/2020	4/12/2020	Not Approved	$400.00	3776765: $400
3rd Submittal	5/1/2020	5/25/2020	Not Approved	$400.00	3831188: $400
4th Submittal	6/12/2020	6/29/2020	See Comments Below	$400.00	3881168: $400
			TOTAL FEES (LDDRS):	**$1,600.00**	**----**

REMARKS:

***** The Conditional Approval of this Drainage Study is to allow the engineer/developer to submit the Improvement Plans to City Land Development Only**

***** Do not submit the Drainage Study to Clark County Regional Flood Control District (CCRFCD) prior to the Structural Design and Calculations being approved by the City Building & Safety Department**

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

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

1. **This drainage study is acceptable in concept;** however, *City of Las Vegas* will not formally accept the study until the *Clark County Regional Flood Control District (CCRFCD)* has issued a letter of concurrence. The engineer should contact the CCRFCD to confirm that they have begun their review.

   Please note that effective April 6, 2020, only electronic submittals to the CCRFCD will be accepted for regional concurrence. Contact cwang@regionalflood.org for direction.

2. The project proposes to build two (2) temporary drainage facilities (graded channels with ripraps), one along the west boundary of the subject site and one further west along the future ***Sheep Mountain Parkway*** alignment. Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements (off-site channels) and post a minimum maintenance bond of $50,000 or 50-percent of the construction cost for the improvements, whichever is greater. The engineer must submit an estimate of the quantities for constructing the facility and an exhibit that adequately shows the location and limits of the drainage facility to *City of Las Vegas Flood Control* for approval. Once the drainage study is conditionally approved, the engineer should contact the City's Land Development Section (229-6371) to begin the agreement process.

   In order for the maintenance bond to be released in the future, a drainage update / letter will be required to justify that the offsite berms / channels are no longer necessary and can be removed.

3. Structural plans for special design storm drain facilities (such as but not limited to SDMH#1, SDMH#4 & SDMH#5) must be submitted for review. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the *City of Las Vegas Building Department* for processing. The engineer must provide a copy of *Building Department* approval of the structures to *Flood Control* prior to final approval of the drainage study.

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
HDR/AYS

T/R/S: T19S/R59E/25
AREA F-25

Referenced Drainage Exhibits

NOTE: THE CONTOURS ALONG THE CENTENNIAL ALIGNMENT WEST OF THE PROJECT SITE IS A COMBINATION OF THE DIRT ACCESS ROAD AND SWALE DESIGN FROM THE WATER TANK STUDY SITE AND THE CLARK COUNTY 2016 2' CONTOURS. SEE THE APPENDIX FOR WATER TANK STUDY SITE, DS 4854, AND GRADING PLANS.

WATER TANK STUDY SITE DS 4854

ACCESS ROAD

CENTENNIAL PARKWAY

SHEEP MOUNTAIN PARKWAY

CENTENNIAL CONDOMINIUMS STUDY SITE DS 4217

SHAUMBER ROAD

TROPICAL PARKWAY

GOAN 0079

GOAN 0044

GOAN 0061 (ANN ROAD DETENTION BASIN)

GOBW 0291

GOBW 0641

GOBW 0244

Project Area

OF-E1 4.60

OF-E2 6.12

OF-E3 10.78

OF-E4 40.00

OF-E5 2.94

OF-E6 23.32

OF-E7 67.80

OF-E8 4.22

OF-E9 5.49

OF-E4-P1 2.88

OF-E4-P2 3.87

OF-E4-P3 9.5

OF-E4-P4 6.91

OF-E6-P1 6.68

OF-E6-P2 6.05

OF-E6-P3 1.17

OF-E6-P4 9.42

ST-D2 0.83

ST-E1 0.58

OP-D2 1.37

ON-I3 1.29

ON-I1 6.09

ON-I2 2.27

ON-I4 0.34

ON-D5 6.40

ON-D6 10.26

ON-D7 1.07

OP-D1 1.02

ST-D3 0.68

ON-D6-P1 1.22

ON-D6-P2 1.05

ON-D6-P3 1.43

ON-D5-P1 1.11

DI1 DI2 DI3 DI4 DI5 DI6 DI7

DIV1

P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12

C1A C1B C1C C1D C1E C1F C1G C1H C1I C1J C1K C1L C1M C1N C1O C1P C1Q C1R

24" RCP¹ Qdes = 23 CFS

36" RCP¹ Qdes=38 CFS

36" RCP¹ Qdes=40 CFS

36" RCP² Qdes=44 CFS

54" RCP³ Lateral

36" RCP¹ Qdes=50 CFS

(2) 36" RCP² Culvert Qdes=74 CFS

42" RCP¹ Qdes=91 CFS

36" RCP² Qdes=86 CFS

72" RCP³

(2)-38"x60" HERCP Qdes=166 CFS

66" RCP³

36" RCP Qdes=40 CFS

6' X 6' RCB³ Qdes = 328 CFS

Q=157 CFS

PRORATE FLOW SUMMARY

Basin	Area (acre)	For Q_{10} YR Flow Flow (cfs)	For Q_{10} YR Flow Flowrate (cfs/acre)	For Q_{100} YR Flow Flow (cfs)	For Q_{100} YR Flow Flowrate (cfs/acre)
OF-E4	40	-	-	83	2.1
OF-E6	23.32	-	-	47	2.0
ON-D4	2.12	3	1.4	7	3.3
ON-D5	6.4	-	-	17	2.7
ON-D6	10.26	-	-	26	2.5
OF-E4-P1	2.88	-	-	6.0	2.1
OF-E4-P2	3.87	-	-	8.0	2.1
OF-E4-P3	9.5	-	-	19.7	2.1
OF-E4-P4	6.91	-	-	14.3	2.1
OF-E6-P1	6.68	-	-	13.5	2.0
OF-E6-P2	6.05	-	-	12.2	2.0
OF-E6-P3	1.17	-	-	2.4	2.0
OF-E6-P4	9.42	-	-	19.0	2.0
ON-D4-P	0.43	0.6	1.4	1.4	3.3
ON-D5-P	1.11	-	-	2.9	2.7
ON-D6-P1	1.22	-	-	3.0	2.5
ON-D6-P2	1.05	-	-	2.7	2.5
ON-D6-P3	1.43	-	-	3.6	2.5

DRAINAGE FACILITIES SUMMARY -PHASE 1

FACILITY	Size	PIPE FLOW Q_{100} (CFS)	NOTES
P1	18" RCP	5	DI1 Capture flow
P2	18" RCP	15	DI1 + DI2 + DI6
P3	18" RCP	8	DI3 Capture flow
P4	18" RCP	7	DI4 Capture flow
P5	42" RCP	120	Section 2 + OF-E8
P6	78" RCP	439	(C1G - 67**)
P7	60" RCP	439	(C1G - 67**)
P8	60" RCP	447	(C1G - 67**) + P3
P9	60" RCP	454	(C1G - 67**) + P3 + P4
P10	72" RCP	609	C1Q
P11	72" RCP	609	C1Q
P12	36" RCP	40	Referenced Flow from Shaumber Road Realignment Study
P13	6' X 6' RCB	613	C1R

FACILITY	Grate Length (FT)	Total Surface flow Q_{100} (CFS)	Intercepted Flow Q_{100} (CFS)	Bypass Flow Q_{100} (CFS)	Notes
DI1	10	11	5	6	CM2 DI on Grade for Q_{100}
DI2	10	10	5	5	CM2 DI on Grade for Q_{100}
DI1	10	5	3	2	CM2 DI on Grade for Q_{10}
DI2	10	5	3	2	CM2 DI on Grade for Q_{10}

FACILITY	Grate Length (FT)	Normal Depth (FT)	Intercepted Flow Q_{100} (CFS)	Bypass Flow Q_{100} (CFS)	Notes
DI3	7.5	0.5	8	24	CM2 DI on Sump
DI4	5	0.5	7	19	CM2 DI on Sump
DI5	5'x12'	1.07	120	0	Ditch Inlet on Sump
DI6	NEENAH R-2501-G Grate	0.67	5	0	ON-I3
DI7	NEENAH R-2501-G Grate	0.52	4	0	OF-E9

NOTES:
** Inlet structure (at C1G) overflow to street ST-D3

STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PHASE 1 CONDITION

Cross Section	Description	Q (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section1 FULL 100' R/W -10 YR	C1JP	2	4.77	0.22	3.53	0.78
Section1 FULL 100' R/W - 100 YR	C1JP	164	4.77	0.72	8.64	6.22
Section2 HALF 80' R/W -10 YR	(ST-D3) + (ON-D7) + 5* + 3* + 0**	11	3.82	0.42	5.15	2.16
Section2 HALF 80' R/W -100 YR	(ST-D3) + (ON-D7) + 24* + 19* + 67**	116	3.82	0.82	8.88	7.28
Section3 onsite @ ON-I1 100 YR - PH1	ON-I1	21	2.20	0.32	4.15	1.33
Section4 onsite @ ON-I2 100 YR - PH1	DIV1 + (ON-I2)	17	2.20	0.30	3.82	1.15
Section5 onsite @ON-D5 100 YR***	ON-D5-P	2.9	2.20	0.27	2.67	0.72
Section6 onsite @ ON-D5 100YR	C1JH	32	1.78	0.50	4.70	2.35
Section6A onsite @ ON-D5 100YR	C1JH - DI3	24	2.00	0.41	5.59	2.29
Section6B onsite @ ON-D5 100 YR	C1JH	32	1.78	0.41	3.71	1.52
Section7 onsite @ON-D6 100 YR****	ON-I4 + (ON-D6-P1)	4	2.20	0.29	2.84	0.82
Section8 onsite @ ON-D6 100 YR	C1JJ - (ON-D6-P3)	23	2.20	0.45	4.39	1.98
Section8A onsite @ ON-D6 100 YR	C1JJ - (ON-D6-P3) - DI4	16	2.00	0.36	5.05	1.82
Section9 onsite @ ON-D6 100 YR	ON-D6-P2	2.7	2.00	0.52	3.31	1.72
Section9A onsite @ ON-D6 100 YR	ON-D6-P3	3.6	1.93	0.58	3.51	2.04
Section9B onsite @ ON-I3 100 YR	ON-I3	5	1.50	0.69	3.47	2.39

NOTES for Phase 1
* Flow from C1H and C1JJ not captured by DI3 and DI4, respectively.
** Inlet structure (at C1G) overflow to street ST-D3
*** Section 5 represents each "Stub" street along Street H. All Stub streets include similar areas and street slopes.
**** Section 7 represents each "Stub" street along Street C. All Stub streets include similar areas and street slopes

PUU CHANNEL NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PHASE 1 & 2 CONDITIONS

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV	Bottom Width (ft)
Section10 INT PH1, PH2	(OF-E3) + (OP-D2)	16	3.47	0.21	3.77	0.79	20
Section11 INT PH1, PH2	C1JA	32	3.47	0.31	4.92	1.53	20
Section12 INT PH1, PH2	C1JB	59	1.70	0.55	4.94	2.72	20
Section13 INT PH1, PH2	C1JC - SMC*(48)	94	1.00	0.85	4.92	4.18	20
Section14 INT PH1, PH2	C1JD - SMC*(48)	96	1.00	0.86	4.96	4.27	20
Section15 INT PH1, PH2	C1JD + (OF-E6-P3) + (OP-D2) - SMC*(48)	112	1.00	0.83	4.92	4.08	25
Section16 INT PH1, PH2	C1JD + (OF-E6-P3) + (OF-E6-P2) + (OP-D1) - SMC*(48)	124	11.10	0.59	7.89	4.66	25
Section17 INT PH1, PH2	OF-E6-P4	19	4.3	0.21	4.24	0.89	-
Section18 INT PH1, PH2	(OF-E7) + SMC*(50)	208	4.1	0.21	4.22	0.89	-
Section19 INT PH1, PH2	C1JF	349	0.7	1.53	4.96	7.59	-

*SMC = Sheep Mountain Channel diverted flow

SHEEP MOUNTAIN CHANNEL NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PHASE 1 & 2 CONDITIONS

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV	NOTES
Section 20 Sheep Mountain Channel	(OF-E6-P1)	6	1.11	0.79	3.24	2.56	V Ditch
Section 21 Sheep Mountain Channel	(OF-E4-P1) + (OF-E4-P2)	14	3.06	0.31	4.49	1.39	Trap. 9' BW
Section 22 Sheep Mountain Channel	(OF-E4-P1) + (OF-E4-P2) + (OF-E4-P3)	34	2.00	0.35	4.05	1.42	Trap. 23' BW
Section 23 Sheep Mountain Channel	(OF-E4-P1) + (OF-E4-P2) + (OF-E4-P3) + (OF-E4-P4) + (OF-E6-P3)	50	4.00	0.28	4.99	1.40	Trap. 35' BW

PHASE 1 INTERIM CONDITION HYDROLOGIC SUMMARY

Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
C1JA	-	13	32
C1JB	-	24	59
C1JC	-	53	142
C1JD	-	53	144
C1JE	-	68	191
C1JF	-	127	349
C1JG	-	284	506
C1JH	-	13	32
C1JJ	-	296	536
C1JJ	-	10	26
C1JK	-	308	566
C1JN	-	8	16
C1JP	-	2	164**
C1JQ	-	348	609
C1JR	-	348	613
D1*	-	6	11
DIV1	-	4	10
36LAT	-	40	40
GOAN	-	157	157
OF-E1	4.60	5	13
OF-E2	6.12	7	16
OF-E3	10.78	11	28
OF-E4	40.00	29	83
OF-E5	2.94	<1	2
OF-E6	23.32	16	47
OF-E7	67.8	59	158
OF-E8	4.22	<1	4
OF-E9	5.49	<1	4
ON-I1	6.09	10	21
ON-I2	2.27	2	6
ON-I3	1.29	2	5
ON-I4	0.34	1	1
ON-D5	6.40	7	17
ON-D6	10.26	10	26
ON-D7	1.07	1	3
OP-D1	1.02	1	2
OP-D2	1.37	1	3
RTC1D	-	52	142
ST-D2	0.83	2	3
ST-D3	0.68	2	3
ST-E1	0.58	1	2

C1JA = OF-E1 + OF-E2 + OP-D2
C1JB = C1JA + OF-E3
C1JC = C1JB + OF-E4
C1JD = C1JC + OF-E5
C1JE = RTC1D + OF-E6 + OP-D1
C1JF = C1JE + OF-E7
C1JG = C1JF + GOAN
C1JH = DIV1 + ON-I2 + ON-D5
C1JJ = C1JG + C1JH
C1JJ = ON-I4 + ON-D6
C1JK = C1JJ + C1JJ + ON-D7 + ST-D3
C1JN = ON-I3 + D1
C1JP = ST-E1 + ST-D2
C1JQ = C1JK + OF-E8 + 36LAT
C1JR = C1JQ + OF-E9
DIV1 = ON-I1 - D1

Notes:
*D1 is the sum of flow captured by drop inlets DI1 and DI2 in street H
164** Flow referenced from the Master Drainage Study for Cliff's Edge (Now known as Providence), DS 3404

NOTES
1. Referenced from the Centennial Condominiums Study.
2. Facility size and flows are referenced from Shaumber Road Realignment Study.
3. Facility size is referenced from 215 Bruce Woodbury Beltway-Craig Road Study and site visits.

KEY:

- ON-D1 4.04 — BASIN NAME/AREA
- ON-D6-P1 0.49 — PRORATE BASIN NAME/AREA
- C11 — CONCENTRATION POINT
- FLOW DIRECTION
- 4—4 — CROSS SECTION
- BASIN BOUNDARY
- PRORATE BASIN BOUNDARY
- EXISTING CCRFCD REG. FAC.
- LOCAL EXISTING FACILITY

Referenced as Existing Condition for Parcel E mass grade study

SCALE: 1" = 150'

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DRAWN SS
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PROJECT NV-1949-1909

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PHASE 1 INTERIM CONDITION OFFSITE BASIN MAP

A PORTION OF APN# 126-25-201-010

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PAGE #

H:\2019\NV-1949-1909 Centennial Heights Townhomes\Project Data\03 Engineering\3.01 Drainage\03_ADD2\Figure\NV-1826-1907_BASIN-PH1.dwg - PH1_INTOFF - 4/30/2020 08:04 am dclark

NOTE: THE CONTOURS ALONG THE CENTENNIAL ALIGNMENT WEST OF THE PROJECT SITE IS A COMBINATION OF THE DIRT ACCESS ROAD AND SWALE DESIGN FROM THE WATER TANK STUDY SITE AND THE CLARK COUNTY 2016 2' CONTOURS. SEE THE APPENDIX FOR WATER TANK STUDY SITE, DS 4854, AND GRADING PLANS.

WATER TANK STUDY SITE: DS 4854

CENTENNIAL PARKWAY

SHEEP MOUNTAIN PARKWAY

CENTENNIAL CONDOMINIOUS STUDY SITE DS 4217

GOAN 0070

GOAN 0044

GOAN 0061 (ANN ROAD DETENTION BASIN)

GOBW 0291

GOBW 0264

GOBW 0244

Project Area

Q=157 CFS

DRAINAGE FACILITIES SUMMARY - PHASE 2

FACILITY	Size	PIPE FLOW Q_{100} (CFS)	NOTES
P1	18" RCP	5	DI1 Capture flow
P2	18" RCP	15	DI1 + DI2 + DI6
P3	18" RCP	8	DI3 Capture flow
P4	18" RCP	7	DI4 Capture flow
P5	42" RCP	122	Section 2 + OF-E8
P6	78" RCP	439	(CI2G - 67**)
P7	60" RCP	439	(CI2G - 67**)
P8	60" RCP	447	(CI2G - 67**) + P3
P9	60" RCP	454	(CI2G - 67**) + P3 + P4
P10	72" RCP	609	CI2Q, See TROPICAL WSFGW model for detail.
P11	72" RCP	609	CI2Q
P12	36" RCP	40	Referenced Flow from Shaumber Road Realignment Study
P13	6 X 6' RCB	613	CI2R

FACILITY	Grate Length (FT)	Total Surface Flow Q_{100} (CFS)	Intercepted Flow Q_{100} (CFS)	Bypass Flow Q_{100} (CFS)	Notes
DI1	10	12	5	7	CM2 DI on Grade for Q_{100}
DI2	10	11	5	6	CM2 DI on Grade for Q_{100}
DI1	10	6	3	3	CM2 DI on Grade for Q_{100}
DI2	10	5	3	2	CM2 DI on Grade for Q_{100}

FACILITY	Grate Length (FT)	Normal Depth (FT)	Intercepted Flow Q_{100} (CFS)	Bypass Flow Q_{100} (CFS)	Notes
DI3	7.5	0.5	8	20	CM2 DI on Sump
DI4	5	0.5	7	25	CM2 DI on Sump
DI5	5'x12'	1.09	122	0	Ditch inlet on Sag. The intercepted flow is sum of flow at section 2 plus OF-E8
DI6	NEENAH R-2501-G Grate	0.67	5	0	(ON-D1A) + (ON-D2A) + (ON-D3A)
DI7	NEENAH R-2501-G Grate	0.52	4	0	OF-E9

NOTES:
** Inlet structure (at CI2G) overflow to street ST-D3

STREET NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PHASE 2 CONDITION

Cross Section	Description	Q (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV
Section1 FULL 100' R/W-10 YR	CI2P	2	4.77	0.22	3.53	0.78
Section1 FULL 100' R/W - 100 YR	CI2P	164	4.77	0.72	8.64	6.22
Section2 HALF 80' R/W -10 YR	(ST-D3) + (ON-D7) + 4* + 6* + 0**	13	3.82	0.44	5.36	2.36
Section2 HALF 80' R/W -100 YR	(ST-D3) + (ON-D7) + 20* + 25* + 67**	118	3.82	0.82	8.93	7.32
Section3 onsite @ ON-D3 10 YR	CI2L	11	2.20	0.37	3.53	1.31
Section3 onsite @ ON-D3 100 YR	CI2L	23	2.20	0.45	4.39	1.98
Section4 HALF EAST onsite @ ON-D4 100 YR	D2	8	2.20	0.41	3.85	1.58
Section5 onsite @ON-D5 100 YR***	ON-D5-P	2.9	2.20	0.27	2.67	0.72
Section6 onsite @ ON-D5 100YR	CI2H	28	1.78	0.48	4.46	2.14
Section6A onsite @ ON-D5 100YR	CI2H - DI3	20	2.00	0.39	5.34	2.08
Section6B onsite @ ON-D5 100YR	CI2H	28	1.78	0.39	3.59	1.40
Section7 onsite @ON-D6 100 YR****	D2 + (ON-D4A) + (ON-D6-P1)	12	2.20	0.38	3.59	1.36
Section8 onsite @ ON-D6 100 YR	CI2J - (ON-D6-P3)	29	2.20	0.47	4.82	2.27
Section8A onsite @ ON-D6 100 YR	CI2J - (ON-D6-P3) - DI4	22	2.00	0.40	5.46	2.18
Section9 onsite @ ON-D6 100 YR	ON-D6-P2	2.7	2.00	0.52	3.31	1.72
Section9A onsite @ ON-D6 100 YR	ON-D6-P3	3.6	1.93	0.58	3.51	2.04
Section9B onsite @ ON-D3A 100 YR	(ON-D1A) + (ON-D2A) + (ON-D3A)	5	1.50	0.69	3.47	2.39

NOTES for Phase 2
* Flow from CI2H and CI2J not captured by DI3 and DI4, respectively.
** Inlet structure (at CI2G) overflow to street ST-D3
*** Section 5 represents each "Stub" street along Street H. All Stub streets include similar areas and street slopes.
**** Section 7 represents each "Stub" street along Street C. All Stub streets include similar areas and street slopes

PUU CHANNEL NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PHASE 1 & 2 CONDITIONS

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV	Bottom Width (ft)
Section10 INT PH1_PH2	(OF-E1) + (OP-D2)	16	3.47	0.21	3.77	0.79	20
Section11 INT PH1_PH2	CI2A	32	3.47	0.31	4.92	1.53	20
Section12 INT PH1_PH2	CI2B	59	1.70	0.55	4.94	2.72	20
Section13 INT PH1_PH2	CI2C - SMC*(48)	94	1.00	0.85	4.92	4.18	20
Section14 INT PH1_PH2	CI2D - SMC*(48)	96	1.00	0.86	4.96	4.27	20
Section15 INTPH1_PH2	CI2D + (OF-E6-P1) + (OP-D1) - SMC*(48)	112	1.00	0.83	4.92	4.08	25
Section16 INT PH1_PH2	CI2D + (OF-E6-P1) + (OF-E6-P2) + (OP-D1) - SMC*(48)	124	11.10	0.99	7.89	4.66	25
Section17 INT PH1_PH2	OF-E6-P4	19	4.3	0.21	4.24	0.89	-
Section18 INT PH1_PH2	(OF-E7) + SMC*(50)	208	4.1	0.71	4.22	0.89	-
Section19 INT PH1_PH2	CI2F	349	0.7	1.53	4.96	7.59	-

*SMC = Sheep Mountain Channel diverted flow

SHEEP MOUNTAIN CHANNEL NORMAL DEPTH CALCULATION SUMMARY FOR INTERIM PHASE 1 & 2 CONDITIONS

Cross Section	Description	Q_{100} (cfs)	Slope (%)	Depth (ft)	Velocity (ft/s)	DxV	NOTES
Section 20 Sheep Mountain Channel	(OF-E4-P1)	6	1.11	0.79	3.24	2.56	V Ditch
Section 21 Sheep Mountain Channel	(OF-E4-P1) + (OF-E4-P2)	14	3.06	0.31	4.49	1.39	Trap. 9' BW
Section 22 Sheep Mountain Channel	(OF-E4-P1) + (OF-E4-P2) + (OF-E4-P3)	34	2.00	0.35	4.05	1.42	Trap. 23' BW
Section 23 Sheep Mountain Channel	(OF-E4-P1) + (OF-E4-P2) + (OF-E4-P3) + (OF-E4-P4) + (OF-E6-P3)	50	4.00	0.28	4.99	1.40	Trap. 35' BW

PRORATE FLOW SUMMARY

Basin	Area (acre)	For Q_{10} YR Flow: Flow (cfs)	For Q_{10} YR Flow: Flowrate (cfs/acre)	For Q_{100} YR Flow: Flow (cfs)	For Q_{100} YR Flow: Flowrate (cfs/acre)
OF-E4	40	-	-	83	2.1
OF-E6	23.32	-	-	47	2.0
ON-D4	2.12	3	1.4	7	3.3
ON-D5	6.4	-	-	17	2.7
ON-D6	10.26	-	-	26	2.5
OF-E4-P1	2.88			6.0	2.1
OF-E4-P2	3.87			8.0	2.1
OF-E4-P3	9.5			19.7	2.1
OF-E4-P4	6.91			14.3	2.1
OF-E6-P1	6.68	-	-	13.5	2.0
OF-E6-P2	6.05	-	-	12.2	2.0
OF-E6-P3	1.17	-	-	2.4	2.0
OF-E6-P4	9.42			19.0	2.0
ON-D4-P	0.43	0.6	1.4	1.4	3.3
ON-D5-P	1.11	-	-	2.9	2.7
ON-D6-P1	1.22	-	-	3.0	2.5
ON-D6-P2	1.05	-	-	2.7	2.5
ON-D6-P3	1.43	-	-	3.6	2.5

PHASE 2 INTERIM CONDITION HYDROLOGIC SUMMARY

Basin	Area (acres)	Q_{10} (cfs)	Q_{100} (cfs)
CI2A	-	13	32
CI2B	-	24	59
CI2C	-	53	142
CI2D	-	53	144
CI2E	-	68	191
CI2F	-	127	349
CI2G	-	284	506
CI2H	-	12	28
CI2I	-	292	531
CI2J	-	13	32
CI2K	-	307	566
CI2L	-	11	23
CI2M	-	8	19
CI2N	-	9	17
CI2P	-	2	164***
CI2Q	-	347	609
CI2R	-	348	613
DI1*	-	6	11
D2**	-	3	8
DIV1	-	5	12
DIV2	-	5	11
36LAT	-	40	40
GOAN	-	157	157
OF-E1	4.60	5	13
OF-E2	6.12	7	16
OF-E3	10.78	11	28
OF-E4	40.00	29	83
OF-E5	2.94	<1	2
OF-E6	23.32	16	47
OF-E7	67.8	59	158
OF-E8	4.22	<1	4
OF-E9	5.49	<1	4
ON-D1	2.34	4	9
ON-D1A	0.56	1	2
ON-D2	2.38	4	9
ON-D2A	0.48	1	2
ON-D3	1.53	3	6
ON-D3A	0.27	<1	1
ON-D4	2.12	3	7
ON-D4A	0.34	1	1
ON-D5	6.40	7	17
ON-D6	10.26	10	26
ON-D7	1.07	1	3
OP-D1	1.02	1	2
OP-D2	1.37	1	3
RTC2D		52	142
ST-D2	0.83	2	3
ST-D3	0.68	2	3
ST-E1	0.58	1	2

CI2A = OF-E1 + OF-E2 + OP-D2
CI2B = CI2A + OF-E3
CI2C = CI2B + OF-E4
CI2D = CI2C + OF-E5
CI2E = RTC2D + OF-E6 + OP-D1
CI2F = CI2E + OF-E7
CI2G = CI2F + GOAN
CI2H = DIV2 + ON-D5
CI2I = CI2G + CI2H
CI2J = ON-D4A + ON-D6 + D2
CI2K = CI2I + CI2J + ON-D7 + ST-D3
CI2L = ON-D1 + ON-D2 + ON-D3
CI2M = DIV1 + ON-D4
CI2N = ON-D1A + ON-D2A + ON-D3A +D1
CI2P = ST-E1 + ST-D2
CI2Q = CI2K + OF-E8 + 36LAT
CI2R = CI2Q + OF-E9
DIV1 = CI2L - D1
DIV2 = CI2M - D2

Notes:
D1* is the sum of flow captured by drop inlets DI1 and DI2 in street H
D2** is Sum of DI2 bypass flow and the flow (ON-D4-P) contributed by east side of ON-D4 in street H.
164*** Flow referenced from the Master Drainage Study for Cliff's Edge (Now known as Providence), DS 3404

NOTES
1. Referenced from the Centennial Condominiums Study.
2. Facility size and flows are referenced from Shaumber Road Realignment Study.
3. Facility size is referenced from 215 Bruce Woodbury Beltway-Craig Road Study and site visits

KEY:

- ON-D1 / 4.04 — BASIN NAME/AREA
- ON-D6-P1 / 0.49 — PRORATE BASIN NAME/AREA
- CI2 — CONCENTRATION POINT
- FLOW DIRECTION
- 4 — 4 — CROSS SECTION
- BASIN BOUNDARY
- PRORATE BASIN BOUNDARY
- EXISTING CCRFCD REG. FAC.
- LOCAL EXISTING FACILITY

Phase 2 is controlling design condition

SCALE: 1" = 150'

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DRAWN SS
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PROJECT NV-1949-1909

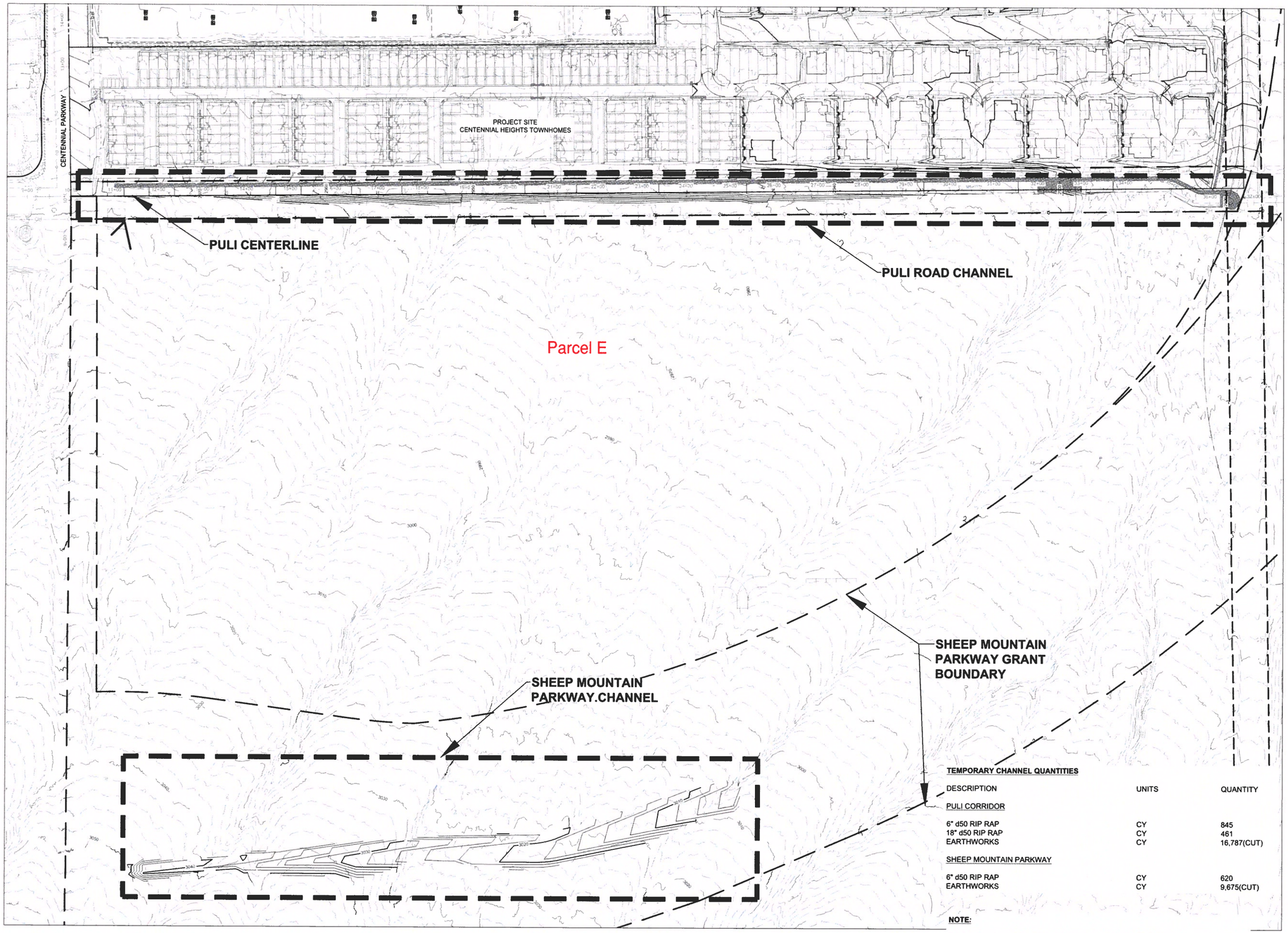
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CITY OF LAS VEGAS
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PHASE 2 INTERIM CONDITION OFFSITE BASIN MAP

A PORTION OF APN# 126-25-201-010

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PAGE #



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0 100' 200'
SCALE: 1" = 100'

TEMPORARY CHANNEL QUANTITIES

DESCRIPTION	UNITS	QUANTITY
PULI CORRIDOR		
6" d50 RIP RAP	CY	845
18" d50 RIP RAP	CY	461
EARTHWORKS	CY	16,787(CUT)
SHEEP MOUNTAIN PARKWAY		
6" d50 RIP RAP	CY	620
EARTHWORKS	CY	9,675(CUT)

NOTE:

REFER TO THE CENTENNIAL HEIGHTS TOWNHOMES PHASE ONE IMPROVEMENT PLANS FOR FOR CONSTRUCTION DOCUMENTS RELATED TO THE TEMPORARY CHANNELS FOR SHEEP MOUNTAIN PARKWAY AND PULI ROAD.

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PRELIMINARY
NOT FOR CONSTRUCTION

CENTENNIAL HEIGHTS TOWNHOMES

LAS VEGAS, NEVADA

SHEEP MOUNTAIN PARKWAY AND PULI GRADING

TEMPORARY OFFSITE CHANNEL IMPROVEMENTS

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Referenced Report Excerpts

ADDENDUM #1

TO THE

TECHNICAL DRAINAGE STUDY

FOR

CENTENNIAL HEIGHTS TOWNHOMES

IN

CITY OF LAS VEGAS, NEVADA

PREPARED FOR

HARMONY HOMES, LLC
8912 Spanish Ridge Ave. Ste. 200
Las Vegas, NV, 89148
Ph. (702) 570-7240



MARCH 2020

HORROCKS ENGINEERS PROJECT NV-1949-1909

Horrocks Engineers
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the facility and an exhibit that adequately shows the location and limits of the drainage facility to City of Las Vegas Flood Control for approval. Once the drainage study is conditionally approved, the engineer should contact the City's Land Development Section (229-6371) to begin the agreement process.

In order for the maintenance bond to be released in the future, a drainage update / letter will be required to justify that the offsite berms / channels are no longer necessary and can be removed.

RESPONSE: Channel Discusison

Noted. It should be noted that the temporary drainage facility has been relocated. There are now two (2) temporary graded channels. One is located entirely within the 100' Puli corridor. The other is located within the Sheep Mountain Parkway ROW. Both channels are designed to the same standards and criteria discussed with the City as the previously proposed offsite channel. The velocities in the channel remain non-erosive, and riprap is provided at the eastern toe and embankment of Puli Road. The Puli Channel will be constructed with Phase 1 and will provide protection of the rough grading area during this interim condition. See the Phase 1 plans and profile sheets for the Sheep Mountain Channel and the Puli Channel grading and profiles. Upon approval, an estimate of quantities will be provided and used to begin the agreement process.

5. **The proposed channel to the west requires offsite grading. Obtain a notarized letter of permission for grading from the adjacent property owner prior to the final approval of the subject study.**

RESPONSE:

Noted. During the course of coordination with the westerly property owner, and mitigating their concerns, the offsite channel has been relocated and split between two (2) locations. One will be located in the Sheep Mountain Parkway ROW and the other is located within the Puli Alignment. The grading of the Puli Channel is located in the westerly parcel. Permission to grade will be obtained. There is ongoing coordination for the Puli alignment with the westerly property owner (Olympia). It is acknowledged that permission to grade will be a condition of approval, and that if permission to grade cannot be obtained, an update or addendum will be required.

Section 9 is located at the downstream of the onsite swale along the proposed wall. The tributary area for Section 9 is the same for each condition and is the prorated basin ON-D6-P2. Section 9A is located at the southern end of the onsite swale located along the proposed retaining wall along the eastern border of the project site. The tributary area of Section 9A is the same for each condition and is the prorated basin ON-D6-P3.

Channel Discusison

Cross Section 10 through 16 are located along the Puli Channel. The tributary area includes the offsite upstream basins (OF-E1, OF-E2, OF-E3, OF-E4, OF-E5, OF-E6, and OF-E7) and the onsite park basins (OP-D1 and OP-D2.) minus the prorated areas that are captured and conveyed by the Sheep Mountain Channel. Sections 17 and 18 are the upstream existing washes and are presented to establish the flow profiles in the washes upstream of the project site.

The Puli Channel velocities are all under 5 fps except for section 16. The reach through section 16 drops down at 11.1% and will be lined with riprap, D_{50} = 18". See Appendix D for riprap calculations. In all other sections, the eastern embankment is armored with D_{50} = 6" along the Puli Channel up to a depth of normal depth plus minimum 1' of freeboard. The area downstream of Section 16 is adjacent to the natural wash. The entire eastern embankment through this reach will be armored with D_{50} = 6" to prevent erosion and scour. The Puli Channel discharges flows into the Tropical Parkway storm drain system and Tropical Parkway (surface flow).

Sections 20 thru 23 are located along the Sheep Mountain Channel. The sections are naturally lined V- and trapezoidal section with riprap armoring along the eastern slope and toe. The velocities within the Sheep Mountain Channel are less than 5 fps and are considered non-erosive. The riprap is provided as a precautionary measure and was discussed with the City in coordination meetings.

24. The Study states that the Phase II Interim Condition is the worst-case scenario and has the highest peak flow rates (page 8-9), however the Ultimate Condition flow rates are in fact the highest and should therefore be the dictating design flows.

Phase II vs Ultimate Condition

The Ultimate Condition excludes the area upstream of Sheep Mountain Parkway as it is conveyed south of Tropical Parkway as shown on Figure 5, the W map. This area is not tributary to the project site. For this reason, the Phase 2 interim condition includes the highest peak flows for the Storm Drain in Tropical. These facilities were design for the Phase 2 interim condition. See Appendix D for the pertinent WSPG models. Below Table 2 is a summary of peak pipe flows along the storm Drain in Tropical (P 6, P7, P8, P9, P10 and 11).

It should be noted that the approved BLM 270 MDS proposed conveying runoff from the area upstream of Sheep Mountain Parkway (basins OFF3 and SP3) and an area north of Centennial Parkway (basins OFF2 and SP2) in the Tropical storm drain system. The proposed diversion increases the peak flows in the system beyond the capacity of the existing system with the current infrastructure. Coordination between Harmony Homes and Olympia are ongoing for the ultimate storm drain system in Tropical Parkway. However, due to the unknown variables in their design, flow patterns, and proposed improvements, this study could not accept runoff beyond the downstream system capacity.

Based on this, the intent of this submittal is to propose facilities for the design condition (Phase 2 Interim conditions) of the project site. This submittal design provides facilities that meet City and CCRFCD criteria and drainage study approval is sought. Proposing facilities for possible future development and drainage pattern changes is not in the purview of the drainage study. It is noted that if the storm drain facility requirements change, based on a revised drainage plan by the adjacent developer, an update will be required.

Table 2

TROPICAL PARKWAY FLOW VALUES COMPARISON			
Concentration Points (PH1_PH2_ULT)	Q_{100}		
	PH1	PH2	ULT
CI1G_CI2G_CUG	506	506	435
CI1K_CI2K_CUK	566	566	501
CI1Q_CI2Q_CUQ	609	609	552
CI1R_CI2R_CUR	613	613	564

WSPG model is sufficient to model the storm drain in Tropical Parkway. See Appendix D for the revised hydraulic modeling for the Proposed Storm drain.

46. The proposed wrought iron fence must utilize RTC Uniform Standard Drawing 425.S1. Clearly label as such in all Construction Notes and pertinent details.

Noted. The CCAUSD #425.S1 is now referenced and labeled appropriately in the Construction Notes and the pertinent details.

Addendum #1 Design Revisions:

There are several major design changes from the original submittal of the TDS that are unrelated to the comments received. These changes and applicable criteria are discussed in the following paragraphs. These changes are a result of further coordination with the property owners to the west (Olympia), their engineer (Westwood), the City and value engineering.

Channel Discusison

Offsite Channel – Puli Channel

The unlined, offsite channel proposed with the original submittal has been revised to be located within the proposed Puli Road alignment where the future park corridor will be located. The offsite channel will be referred to as the Puli Channel for the purposes of this project. The Puli Channel will be an unlined trapezoidal channel with a variable flat bottom width and 3:1 side slopes. The Puli Channel longitudinal slope has been design to reduce velocities to velocities that are considered non-erosive (<5 fps). The Puli Channel includes at least one foot of freeboard. The eastern side slope and toe incudes riprap armoring to reduce erosion and sediment transport. The Puli Channel flows south and is captured by the proposed Tropical storm drain system. The Puli Channel is considered an interim condition and will be unnecessary when the upstream area is developed. The linear park will replace the Puli Channel and flow conveyance within the park will be limited to the flows generated within the Puli corridor south of Centennial Parkway.

Offsite Channel – Sheep Mountain Parkway

In addition to the Puli Channel, an additional offsite interim channel is proposed within the existing Sheep Mountain Parkway alignment. The Sheep Mountain Channel shares the same design criteria as the original offsite channel and the Puli Channel. The Sheep Mountain Channel includes one foot of freeboard, riprap armoring along the eastern toe and the eastern side slope. The channel conveys flows upstream of the Sheep Mountain ROW south to the existing wash

Channel Discusison

located in basin OF-E7. The discharge from the Sheep Mountain Parkway then flows east in the natural channel to the proposed storm drain in Tropical Parkway. The Sheep Mountain Channel is an interim facility and is not designed to convey runoff from areas north of Centennial Parkway. The benefit of the Sheep Mountain is that it reduces the flows conveyed by the Puli Channel, which allows the Puli Channel design to avoid the existing power poles and their maintenance pads that are within the corridor. The Sheep Mountain Channel will be constructed with the Phase 1 improvements. See Figures 6 and 8 for Sheep Mountain Channel locations, and a summary of normal depth locations and cross sections. The Sheep Mountain Channel flow diversion of flows and discharges has been coordinated with the adjacent land owner (Olympia)

Tropical Parkway Storm Drain

The storm drain design in Tropical Parkway has been revised and is designed for the project site design condition (Phase 2 Interim condition). The Phase 2 interim condition includes the highest flows of the developed conditions. The collection structure is a sump with a 78" RCP (P6) opening. At this location, there is 506 cfs (CI2G). The 78" RCP will collect 439 cfs and the remaining 67 cfs overtops and enters Tropical Parkway. The 78" RCP is reduced to a 60" RCP (P7). Then 8 cfs is conveyed from an 18" RCP (P3) and is conveyed east in a 60" RCP (P8, 447 cfs). Then 7 cfs is combined from an 18" RCP (P4) and is conveyed east in a 60"RCP (P9, 454 cfs). At the intersection of Shaumber Road and Tropical Parkway, an existing 36" RCP discharges 40 cfs and a proposed 42" RCP conveys 122 cfs into pipe P10, a 72" RCP (609 cfs). DI5, a 5'X12' NDOT Type 2 drop inlet is located at the existing entrance of the 10'X5' RCB culvert that is to be removed. Drop inlet DI5 is located at a sump and will collect the 122 cfs with 0.63' of ponding. DI5 was calculated using a 50% clogging factor per the manual. Pipe P10 conveys flows east to a manhole where it turns south in pipe P11, a 72" RCP (609 cfs). Pipe P11 connects to the existing GOAN 0264 lateral, P12 (6'x6' RCB. The runoff from basin OF-E9 (4 cfs) is collected in a grated manhole at the manhole that connects the existing 6'x6x RCB lateral and the proposed 72" RCP. P12 discharges into the regional beltway facilities GOAN 0264. HGLs and 100-year flowrates are labeled on the storm drain profile sheets. See Appendix D for the WSPG analysis. The beltway facilities are modeled using WSPG to establish the starting HGL for the Tropical system model. The revised GOAN HGLs can be found on in Appendix D.

The proposed drainage patterns convey flows south and east around the project site. These proposed drainage patterns discharge flows downstream from where they are captured into the GOAN facilities. The HGLs are not adversely affected by this change.

VOLUME 1: REPORT, APPENDIX A AND APPENDIX B

OF

TECHNICAL DRAINAGE STUDY

FOR

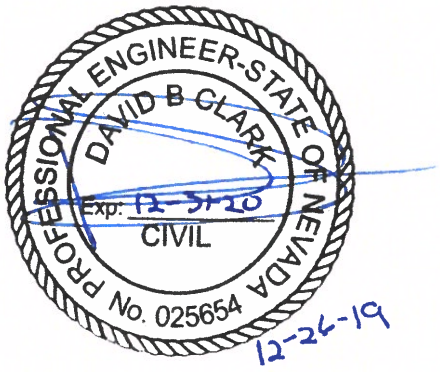
CENTENNIAL HEIGHTS TOWNHOMES

IN

CITY OF LAS VEGAS, NEVADA

PREPARED FOR

HARMONY HOMES, LLC
8912 Spanish Ridge Ave. Ste. 200
Las Vegas, NV, 89148
Ph. (702) 570-7240



DECEMBER 2019

HORROCKS ENGINEERS PROJECT NV-1949-1909

Horrocks Engineers
1401 N Green Valley Pkwy, Suite 160
Henderson, NV 89074
702.966.4063

HORROCKS
ENGINEERS

Shaumber Road Realignment, and designed the GOBW regional facilities. The Beltway Study conducted hydrologic and hydraulic analysis of the upstream area of the GOBW site, including the project site. These designed local existing facilities ultimately discharges collected runoff into the now existing GOBW regional facilities. Our study has been referenced the pipe/culvert sizes and their flows designed by Interim CC 215 Beltway. See Appendix C for pertinent Study information and plan sheets.

The engineer has reviewed and accepted the referenced studies as described above, and are used in this study.

V. EXISTING CONDITIONS DRAINAGE

In the existing condition, offsite runoff impacts the project site from the west; which is undeveloped, natural desert and consists of multiple natural washes. The project site is also comprised of numerous natural washes, generally slopes from the northwest to the southeast and discharges from the project site to the east. Multiple washes converge north of the Tropical Parkway Alignment before crossing under Shaumber Road in a 10'x5' RCB culvert. See *Figure 5, Existing Offsite Conditions Basin Map,* for basin delineation, flow paths, and Flow Summary Table.

Runoff from the existing offsite street basin ST-E1 combines with the street basin ST-D2 at concentration point CE8. Concentration Point CE1 is located at inlets in the Condos Study site and combines runoff from the existing offsite basin OF-E1 and the existing onsite basin ON-E1. Concentration Point CE2 is located at inlets in the Condos Study site and combines runoff from the existing offsite basin OF-E2 and the existing onsite basin ON-E2. Concentration Point CE3 is located at inlets in the Condos Study site and combines runoff from the existing offsite basin OF-E3 and the existing onsite basin ON-E3. Concentration Point CE4 combines runoff from the existing offsite basin OF-E4 and the existing onsite basin ON-E4. Runoff at concentration points CE1, CE2, CE3, and CE4 is captured by inlets along the western border of the Condos Site Study and conveyed through the Condos Study Site. The Condos Study Site includes a public (privately maintained) drainage easement along its western border and a concrete U-channel to capture runoff and convey flows to the drop inlets.

Concentration Point CE5 combines runoff from the existing offsite basin OF-E5 and the existing onsite basin ON-E5. CE5 is located at the eastern border of the project site. Runoff from CE5 is captures and conveyed under Shaumber by the dual 38"x60" HERCP culverts. Concentration Point CE6 combines runoff from the existing offsite basin OF-E6 and the existing onsite basin ON-E6. CE6 is located at the eastern border of the project site. Concentration Point CE7 combines runoff from the existing offsite basin OF-E7 and the existing onsite basin ON-E7, and the discharge from Ann Road Detention Basin (157 cfs). CE7 is located at the eastern border of the project site. The runoff at CE6 and CE7 is combined and conveyed under Shaumber Road by the existing 10'X5' RCB culvert.

The flows discharged from the Ann Road Detection Basin (GOAN 0061) are conveyed across the Tropical Parkway alignment to the southwest of the project site, and then is conveyed along the southern boundary of the project site.

VI. PHASE 1 INTERIM CONDITION

The project is intended to be constructed in two (2) phases. The plans accompanying this study is the full grading plans. It is anticipated that a Phase 1 interim improvements will accompany Addendum #1. However, the TDS presents both Phases and includes Phase 1 Interim Condition, Phase 2 Interim Condition, and Ultimate condition.

In the Phase 1 interim condition, the south portion of project site is assumed to be developed and the north portion of project site and the offsite basins are assumed to be in the existing condition. Refer to *Figures 6* and *7* for the Offsite and Onsite Phase 1 Interim Basin Maps, for basin boundaries and flow paths. See Table 3 for a summary of peak flowrates for the 10 year and 100-year events.

The developed south portion of project site consists of townhome residential building including roadways with 30 feet ROW, driveways, landscaping as proposed within the project area. The Phase 2 portion of the site will remain in the existing condition. The Phase 2 area is not adversely affected by the construction of the Phase 1 portion of the site.

Runoff from the existing offsite street basin ST-E1 combines with the street basin ST-D2 at concentration point CI1P. Concentration Point CI1A is located at inlets in the Condos Study site and combines runoff from the existing offsite basin OF-E1 and the existing onsite basin ON-E1. Concentration Point CI1B is located at inlets in the Condos Study site and combines runoff from the existing offsite basin OF-E2 and the existing onsite basin ON-E2. Concentration Point CI1C combines runoff from the existing offsite basin OF-E3 and the existing onsite basin ON-E3. Concentration Point CI1D combines runoff from the existing offsite basin OF-E4 and the existing onsite basin ON-E4. CI1D and CI1C combine at inlets in the Condos Study Site at concentration point CI1L. The Condos site includes a drainage easement along its western border and concrete U-channel to capture and convey flows to the drop inlets.

The runoff from offsite existing basins OF-E5 and OF-E6 combine with the onsite park basins OP-D6 at concentration point CI1E. CI1E and the offsite existing basins OF-E7 combines with CI1E in the interim offsite channel at concentration point CI1F. The discharge from the Ann Road Detention Basin combines with CI1F at concentration point CI1G. Runoff from the onsite existing basin ONE5A and the onsite developed basin ON-D5 combine at CI1H. CI1H and CI1G combine in the Tropical Roadway alignment at concentration point CI1I. Runoff from onsite developed basins ON-D6 and ON-D7 combine with developed street basin ST-D3 and CI1K at concentration point CI71 located at the southeast corner of the project site. The runoff from offsite downstream basin OF-E8 combines with runoff conveyed from south of Tropical Parkway and CI1K at Shaumber Road at concentration point CI1Q.

The flows at CI1G are collected and conveyed in a 78" RCP under Tropical Parkway. Runoff from Street H and Street C are collected by DI3 and DI4 and conveyed into the Tropical mainline. A 5'x6' NDOT Type 2 drop inlet at the northwest corner of Tropical Parkway and Shaumber Road collects runoff and conveys it into the Tropical mainline before the mainline discharges east of Shaumber Road. The existing 10'X5' RCB culvert is to be removed.

VII. PHASE 2 INTERIM CONDITION

In the Phase 2 interim condition, the project site is assumed to be developed and the offsite basins are assumed to be in the existing condition. Refer to *Figures 8* and *9* for the Offsite and Onsite Phase 2 Interim Basin Maps, for basin boundaries and flow paths. See Table 3 for a summary of peak flowrates for the 10 year and 100-year events.

The developed south portion of project site consists of townhome residential building including roadways with 30 feet ROW, driveways, landscaping as proposed within the project area. In Phase 2, the northern portion of the site will be developed including the onsite park, and storm drain utilities in the northern portion of the site.

Referenced Hydrologic Computations

ADDENDUM #1

TO THE

TECHNICAL DRAINAGE STUDY

FOR

CENTENNIAL HEIGHTS TOWNHOMES

IN

CITY OF LAS VEGAS, NEVADA

PREPARED FOR

HARMONY HOMES, LLC
8912 Spanish Ridge Ave. Ste. 200
Las Vegas, NV, 89148
Ph. (702) 570-7240



MARCH 2020

HORROCKS ENGINEERS PROJECT NV-1949-1909

Horrocks Engineers
1401 N Green Valley Pkwy, Suite 160
Henderson, NV 89074
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HORROCKS
ENGINEERS

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Composite Curve Number Calculations

Proj. No: NV-1949-1909 **Project Name:** Centennial Heights TownHomes
Date: 3/8/2020 **Designed By:** dbc/sbl

Basin	Basin Area (ac)	Sub-region Cover Type	Sub-region Soil Type	Sub-region CN	Sub-region Area (ac)	Percent of Basin	Cumulative Percent	Area Weighted CN	Cumulative CN	Composite CN
EXISTING CONDITION										
OF-E1	4.60	Desert Shrub, Poor	D	88	4.60	100.0%	100.0%	88.0	88.0	88
OF-E2	6.12	Desert Shrub, Poor	D	88	6.12	100.0%	100.0%	88.0	88.0	88
OF-E3	10.78	Desert Shrub, Poor	D	88	10.78	100.0%	100.0%	88.0	88.0	88
OF-E4	40.00	Desert Shrub, Poor	D	88	35.75	89.4%	89.4%	78.7	78.7	
OF-E4	40.00	Desert Shrub, Poor	A	63	4.25	10.6%	100.0%	6.7	85.3	85
OF-E5	2.94	Desert Shrub, Poor	A	63	2.94	100.0%	100.0%	63.0	63.0	63
OF-E6	23.32	Desert Shrub, Poor	D	88	18.36	78.7%	78.7%	69.3	69	
OF-E6	23.32	Desert Shrub, Poor	A	63	4.96	21.3%	100.0%	13.4	82.7	83
OF-E7	67.80	Desert Shrub, Poor	D	88	63.05	93.0%	93.0%	81.8	81.8	
OF-E7	67.80	Desert Shrub, Poor	A	63	4.75	7.0%	100.0%	4.4	86.2	86
OF-E8	4.22	Desert Shrub, Poor	A	63	3.84	91.0%	91.0%	57.3	57.3	
OF-E8	4.22	Impervious	A	98	0.38	9.0%	100.0%	8.8	66.2	66
OF-E9	5.49	Desert Shrub, Poor	A	63	5.06	92.2%	92.2%	58.1	58.1	
OF-E9	5.49	Impervious	A	98	0.43	7.8%	100.0%	7.7	65.7	66
ON-E1	4.01	Desert Shrub, Poor	D	88	4.01	100.0%	100.0%	88.0	88.0	88
ON-E2	2.90	Desert Shrub, Poor	D	88	2.9	100.0%	100.0%	88.0	88.0	88
ON-E3	1.44	Desert Shrub, Poor	D	88	1.44	100.0%	100.0%	88.0	88.0	88
ON-E4	1.62	Desert Shrub, Poor	D	88	1.62	100.0%	100.0%	88.0	88.0	88
ON-E5	7.26	Desert Shrub, Poor	D	88	2.93	40.4%	40.4%	35.5	35.5	
ON-E5	7.26	Desert Shrub, Poor	A	63	4.33	59.6%	100.0%	37.6	73.1	73
ON-E6	10.14	Desert Shrub, Poor	D	88	3.68	36.3%	36.3%	31.9	31.9	
ON-E6	10.14	Desert Shrub, Poor	A	63	6.46	63.7%	100.0%	40.1	72.1	72
ON-E7	3.36	Desert Shrub, Poor	D	88	0.99	29.5%	29.5%	25.9	25.9	
ON-E7	3.36	Desert Shrub, Poor	A	63	2.37	70.5%	100.0%	44.4	70.4	70
ST-E1	0.58	Desert Shrub, Poor	D	88	0.58	100.0%	100.0%	88.0	88.0	88
ON-I1	6.09	Newly Graded Areas	D	94	6.09	100.0%	100.0%	94.0	94.0	94
ON-I2	2.27	Newly Graded Areas	D	94	1.59	70.0%	70.0%	65.8	65.8	
ON-I2	2.27	Newly Graded Areas	A	63	0.68	30.0%	100.0%	18.9	84.7	85
ON-I3	1.29	Newly Graded Areas	D	94	1.29	100.0%	100.0%	94.0	94.0	94

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ON-I4	0.34	Newly Graded Areas	D	94	0.34	100.0%	100.0%	94.0	94.0	94

HEC-1 INTERIM PHASE 1 MODEL

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*              JUN   1998               *
*            VERSION 4.1                *
*                                       *
*  RUN DATE   08MAR20  TIME  13:36:26   *
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*                                       *
*    U.S. ARMY CORPS OF ENGINEERS       *
*    HYDROLOGIC ENGINEERING CENTER      *
*         609 SECOND STREET             *
*       DAVIS, CALIFORNIA 95616         *
*           (916) 756-1104              *
*                                       *
*****************************************
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Referenced as existing condition in Parcel E mass grade study

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

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

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


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

              *DIAGRAM
    1         ID
    2         ID      <><><><><><><><><><><><><><><><><><><><>
    3         ID        CENTENNIAL HEIGHTS TOWNHOMES
    4         ID        HYDROLOGIC MODEL
    5         ID        --------------------------
    6         ID
    7         ID        10-YR AND 100-YR STORM EVENT
    8         ID        --------------------------
    9         ID        HORROCKS ENGINEERING
   10         ID        PHASE 1 INTERIM CONDITION
   11         ID        FILE: INT PH1.DAT
   12         ID        PROJECT No: NV-1826-1907
   13         ID        DATE:  MARCH 07 2020
   14         ID      <><><><><><><><><><><><><><><><><><><><>
   15         ID
   16         ID       ---> 6-HOUR / SDN 3 <---
   17         ID
   18         IT       5       0       0     300
   19         IO       5
   20         IN       5
   21         JR    PREC    0.55    1.00
              *
   22         KK   OF-E1
   23         KM   STREET FLOW AT NORTHWEST CORNER OF PROJECT SITE
   24         BA   .0072
   25         PB    3.15
   26         PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
   27         PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
   28         PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
   29         PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
   30         PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
   31         PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
   32         PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
   33         PC    .998    .999   1.00
   34         LS       0      88
   35         UD    .100
              *
   36         KK   OF-E2
   37         BA   .0096
   38         LS       0      88
   39         UD   0.114
              *
   40         KK   OP-D2
   41         BA   .0021
   42         LS       0      85
   43         UD   0.097
              *
```

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

   44         KK    CI1A
   45         KM   COMBINES OFFISTE BASINS OF-E1, OF-E2, AND OP-D2.
   46         HC       3
              *

   47         KK   OF-E3
   48         BA   .0168
   49         LS       0      88
   50         UD   0.124
              *

   51         KK    CI1B
   52         KM   COMBINES CI1A AND OF-E3.
   53         HC       2
              *

   54         KK   OF-E4
   55         BA   .0625
   56         LS       0      85
   57         UD    .189
              *

   58         KK    CI1C
   59         KM   COMBINES CI1B AND OF-E4.
   60         HC       2
              *

   61         KK   OF-E5
   62         BA   .0046
   63         LS       0      63
   64         UD   0.130
              *

   65         KK    CI1D
   66         KM   COMBINES CI1C AND OF-E5.
   67         HC       2
              *

   68         KK  RTCI1D
   69         KM   ROUTE CI1D THROUGH OF-E6 TO CI1E
   70         RD    0850     .03    .013            TRAP
              *

   71         KK   OF-E6
   72         BA   .0364
   73         LS       0      83
   74         UD   0.164
              *
1                                    HEC-1 INPUT                                    PAGE  3

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

   75         KK   OP-D1
   76         BA   .0016
   77         LS       0      78
   78         UD    .101
              *

   79         KK    CI1E
   80         KM   COMBINES RTCI1D, OF-E6, AND OP-D1.
   81         HC       3
              *

   82         KK   OF-E7
   83         BA   .1059
   84         LS       0      86
   85         UD   0.156
              *

   86         KK    CI1F
   87         KM   COMBINES CI1E AND OF-E7.
   88         HC       2
              *

   89         KK   GOAN
   90         KM   Base flow of 157 cfs that comes from Regional Facility GOAN 0044.
   91         BA   .0001
   92         BF     157
   93         LS       0      01
   94         UD   .0001
              *

   95         KK   DUMMY
   96         KM   Dummy card to reset baseflow and has no flow.
   97         BA   .0001
   98         BF     .00
   99         LS       0      01
```

```
 100          UD   .0001
              *

 101          KK    CI1G
 102          KM   COMBINES CI1F, GOAN AND DUMMY.
 103          HC       3
              *

 104          KK   ON-I1
 105          BA   .0095
 106          LS       0      94
 107          UD    .087
              *
1                                      HEC-1 INPUT                                          PAGE  4

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

 108          KK    DIV1
 109          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
 110          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
 111          KM   DIV1 runoff amount flows south and combine with ON-I2 AND ON-D5 and the remai
 112          KM             (D1) is captured by Drop inlets 1 and 2
 113          DT      D1
 114          DI      10     21
 115          DQ       6     10
              *

 116          KK   ON-I2
 117          BA   .0035
 118          LS       0      85
 119          UD   0.086
              *

 120          KK   ON-D5
 121          BA   .0100
 122          LS       0      88
 123          UD    .118
              *

 124          KK    CI1H
 125          KM   COMBINES DIV1, ON-I2, AND ON-D5.
 126          HC       3
              *

 127          KK    CI1I
 128          KM   COMBINES CI1G, CI1H.
 129          HC       2
              *

 130          KK   ON-I4
 131          BA   .0005
 132          LS       0      94
 133          UD   0.050
              *

 134          KK   ON-D6
 135          BA   .0160
 136          LS       0      87
 137          UD   0.136
              *

 138          KK    CI1J
 139          KM   COMBINES ON-I4 AND ON-D6.
 140          HC       2
              *
1                                      HEC-1 INPUT                                          PAGE  5

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

 141          KK   ON-D7
 142          BA   .0017
 143          LS       0      84
 144          UD   0.066
              *

 145          KK   ST-D3
 146          BA   .0011
 147          LS       0      98
 148          UD    .050
              *

 149          KK    CI1K
 150          KM   COMBINES CI1I, CI1J, ON-D7, ST-D3.
 151          HC       4
              *

 152          KK   OF-E8
 153          BA   .0066
 154          LS       0      66
```

```
          155          UD   0.133
                       *

          156          KK   36LAT
          157          KM   The 36" RCP lateral flow from south of Tropical Parkway
          158          KM   which gets into existing 10' X 5' RCB under Shaumber
          159          KM   Road. Flow referenced from Shaumber Road Study.
          160          BA   .0001
          161          BF      40
          162          LS       0      01
          163          UD   .0001
                       *

          164          KK   DUMMY
          165          KM   Dummy card to reset baseflow and has no flow.
          166          BA   .0001
          167          BF     .00
          168          LS       0      01
          169          UD   .0001
                       *

          170          KK    CI1Q
          171          KM   COMBINES CI1K, OF-E8, 36LAT, AND DUMMY.
          172          HC       4
                       *

          173          KK   OF-E9
          174          BA   .0086
          175          LS       0      66
          176          UD   0.194
                       *
1                                                HEC-1 INPUT                                                PAGE  6

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

          177          KK    CI1R
          178          KM   COMBINES CI1Q and OF-E9.
          179          HC       2
                       *

          180          KK   ST-E1
          181          BA   .0009
          182          LS       0      88
          183          UD   0.100
                       *

          184          KK   ST-D2
          185          BA   .0013
          186          LS       0      98
          187          UD   0.050
                       *

          188          KK    CI1P
          189          KM   COMBINES OFFISTE BASIN ST-E1 AND ONSITE BASIN ST-D2.
          190          HC       2
                       *

          191          KK   ON-I3
          192          BA   .0020
          193          LS       0      94
          194          UD   0.079
                       *

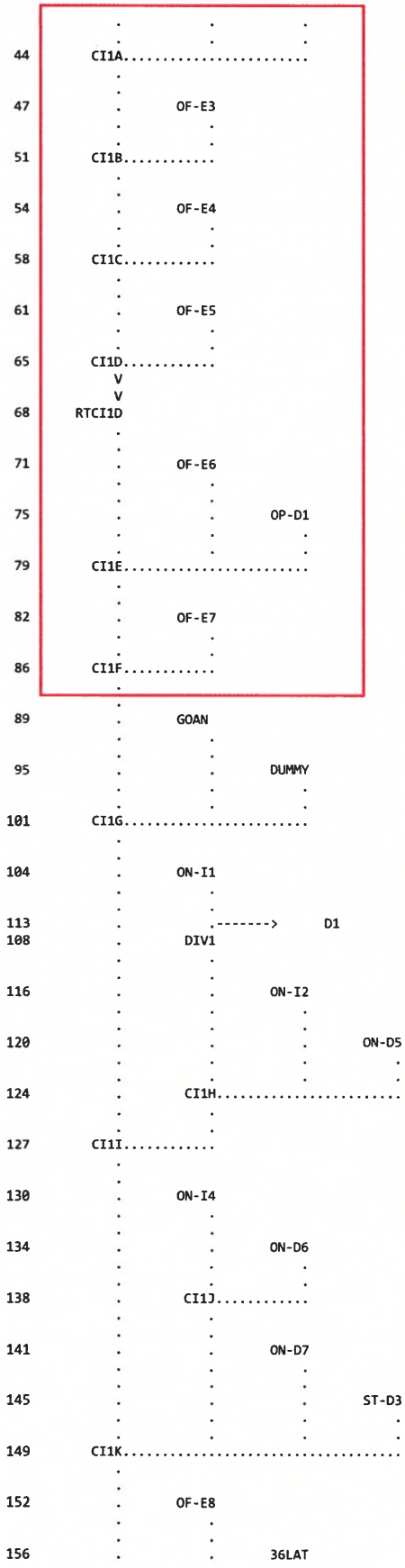
          195          KK   RETD1
          196          KM   RETRIEVE D1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
          197          KM   The flow D1 enters onto ON-D6
          198          DR      D1
                       *

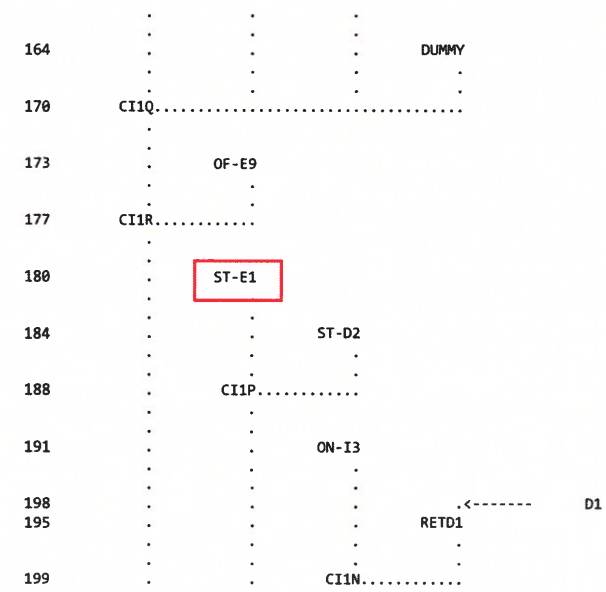
          199          KK    CI1N
          200          KM   COMBINES OFFISTE BASIN ON-I3 AND D1.
          201          HC       2
                       *
                       *
                       *
          202          ZZ
1
               SCHEMATIC DIAGRAM OF STREAM NETWORK

 INPUT
  LINE       (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

      22      OF-E1
                .
                .
      36        .       OF-E2
                .          .
                .          .
      40        .          .       OP-D2
```


44 CI1A
47 OF-E3
51 CI1B
54 OF-E4
58 CI1C
61 OF-E5
65 CI1D
68 RTCI1D
71 OF-E6
75 OP-D1
79 CI1E
82 OF-E7
86 CI1F
89 GOAN
95 DUMMY
101 CI1G
104 ON-I1
113 D1
108 DIV1
116 ON-I2
120 ON-D5
124 CI1H
127 CI1I
130 ON-I4
134 ON-D6
138 CI1J
141 ON-D7
145 ST-D3
149 CI1K
152 OF-E8
156 36LAT



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
1*****************************************
*                                       *
*   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
*             JUN   1998                *
*           VERSION 4.1                 *
*                                       *
*  RUN DATE   08MAR20  TIME  13:36:26   *
*                                       *
*****************************************
```

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

```
<><><><><><><><><><><><><><><><><><><><>
  CENTENNIAL HEIGHTS TOWNHOMES
  HYDROLOGIC MODEL
  ---------------------------

  10-YR AND 100-YR STORM EVENT
  ---------------------------
  HORROCKS ENGINEERING
  PHASE 1 INTERIM CONDITION
  FILE: INT PH1.DAT
  PROJECT No: NV-1826-1907
  DATE:  MARCH 07 2020
<><><><><><><><><><><><><><><><><><><><>

 ---> 6-HOUR / SDN 3 <---
```

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

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

                 COMPUTATION INTERVAL     .08 HOURS
                      TOTAL TIME BASE   24.92 HOURS

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

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

      JR          MULTI-RATIO OPTION
                      RATIOS OF PRECIPITATION
                      .55      1.00
1
```

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1 .55	RATIO 2 1.00
HYDROGRAPH AT						
+	OF-E1	.01	1	FLOW	5.	13.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	OF-E2	.01	1	FLOW	7.	16.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OP-D2	.00	1	FLOW	1.	3.
				TIME	3.50	3.50
3 COMBINED AT						
+	CI1A	.02	1	FLOW	13.	32.
				TIME	3.58	3.50
HYDROGRAPH AT						
+	OF-E3	.02	1	FLOW	11.	28.
				TIME	3.58	3.58
2 COMBINED AT						
+	CI1B	.04	1	FLOW	24.	59.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E4	.06	1	FLOW	29.	83.
				TIME	3.67	3.58
2 COMBINED AT						
+	CI1C	.10	1	FLOW	53.	142.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E5	.00	1	FLOW	0.	2.
				TIME	4.92	3.58
2 COMBINED AT						
+	CI1D	.10	1	FLOW	53.	144.
				TIME	3.58	3.58
ROUTED TO						
+	RTCI1D	.10	1	FLOW	52.	142.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E6	.04	1	FLOW	16.	47.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OP-D1	.00	1	FLOW	1.	2.
				TIME	3.58	3.50
3 COMBINED AT						
+	CI1E	.14	1	FLOW	68.	191.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E7	.11	1	FLOW	59.	158.
				TIME	3.58	3.58
2 COMBINED AT						
+	CI1F	.25	1	FLOW	127.	349.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	GOAN	.00	1	FLOW	157.	157.
				TIME	.00	.00
HYDROGRAPH AT						
+	DUMMY	.00	1	FLOW	0.	0.
				TIME	.00	.00
3 COMBINED AT						
+	CI1G	.25	1	FLOW	284.	506.

				TIME	3.58	3.58
HYDROGRAPH AT						
+	ON-I1	.01	1	FLOW	10.	21.
				TIME	3.50	3.50
DIVERSION TO						
+	D1	.01	1	FLOW	6.	11.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DIV1	.01	1	FLOW	4.	10.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ON-I2	.00	1	FLOW	2.	6.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ON-D5	.01	1	FLOW	7.	17.
				TIME	3.58	3.58
3 COMBINED AT						
+	CI1H	.02	1	FLOW	13.	32.
				TIME	3.50	3.50
2 COMBINED AT						
+	CI1I	.27	1	FLOW	296.	536.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ON-I4	.00	1	FLOW	1.	1.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ON-D6	.02	1	FLOW	10.	26.
				TIME	3.58	3.58
2 COMBINED AT						
+	CI1J	.02	1	FLOW	10.	26.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ON-D7	.00	1	FLOW	1.	3.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ST-D3	.00	1	FLOW	2.	3.
				TIME	3.50	3.50
4 COMBINED AT						
+	CI1K	.29	1	FLOW	308.	566.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E8	.01	1	FLOW	0.	4.
				TIME	3.75	3.58
HYDROGRAPH AT						
+	36LAT	.00	1	FLOW	40.	40.
				TIME	.00	.00
HYDROGRAPH AT						
+	DUMMY	.00	1	FLOW	0.	0.
				TIME	.00	.00
4 COMBINED AT						
+	CI1Q	.30	1	FLOW	348.	609.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E9	.01	1	FLOW	0.	4.
				TIME	3.83	3.67
2 COMBINED AT						
+	CI1R	.30	1	FLOW	348.	613.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ST-E1	.00	1	FLOW	1.	2.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ST-D2	.00	1	FLOW	2.	3.
				TIME	3.50	3.50
2 COMBINED AT						
+	CI1P	.00	1	FLOW	2.	5.
				TIME	3.50	3.50
HYDROGRAPH AT						

```
+                 ON-I3       .00     1   FLOW           2.       5.
                                          TIME         3.50     3.50

 HYDROGRAPH AT
+                 RETD1       .00     1   FLOW           6.      11.
                                          TIME         3.50     3.50

  2 COMBINED AT
+                  CI1N       .00     1   FLOW           8.      16.
                                          TIME         3.50     3.50
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
           RTCI1D  MANE          .84     52.76     215.67       .63      5.00     51.90     215.00         .63

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .3450E+01 EXCESS= .0000E+00 OUTFLOW= .3450E+01 BASIN STORAGE= .1169E-03 PERCENT ERROR=    .0


         FOR PLAN = 1  RATIO=  .00
           RTCI1D  MANE          .65    142.69     215.81      1.74      5.00    141.56     215.00        1.74

 CONTINUITY SUMMARY (AC-FT) - INFLOW= .9529E+01 EXCESS= .0000E+00 OUTFLOW= .9529E+01 BASIN STORAGE= .1185E-03 PERCENT ERROR=    .0



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

HEC-1 INTERIM PHASE 2 MODEL

```
1*****************************************
 *                                       *
 *   FLOOD HYDROGRAPH PACKAGE  (HEC-1)   *
 *               JUN   1998              *
 *            VERSION 4.1                *
 *                                       *
 *  RUN DATE   08MAR20  TIME  14:05:59   *
 *                                       *
 *****************************************
```

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

Referenced for proposed condition in Parcel E mass grade study - worst case flow rates for Townhomes study

```
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

                    *DIAGRAM
               1    ID
               2    ID      <><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><>
               3    ID        CENTENNIAL HEIGHTS TOWNHOMES
               4    ID        HYDROLOGIC MODEL
               5    ID        ---------------------------
               6    ID
               7    ID        10-YR AND 100-YR STORM EVENT
               8    ID        ---------------------------
               9    ID        HORROCKS ENGINEERING
              10    ID        PHASE 2 INTERIM CONDITION
              11    ID        FILE: INT PH2.DAT
              12    ID        PROJECT No: NV-1826-1907
              13    ID        DATE:  MARCH 07 2020
              14    ID      <><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><><>
              15    ID
              16    ID       ---> 6-HOUR / SDN 3 <---
              17    ID
              18    IT       5       0       0     300
              19    IO       5
              20    IN       5
              21    JR    PREC    0.55    1.00
                    *
              22    KK   OF-E1
              23    KM   STREET FLOW AT NORTHWEST CORNER OF PROJECT SITE
              24    BA   .0072
              25    PB    3.15
              26    PC    .000    .020    .057    .070    .087    .108    .124    .130    .130    .130
              27    PC    .130    .130    .130    .133    .140    .142    .148    .158    .172    .181
              28    PC    .190    .197    .199    .200    .201    .204    .214    .229    .241    .249
              29    PC    .251    .256    .270    .278    .281    .283    .295    .322    .352    .409
              30    PC    .499    .590    .710    .744    .781    .812    .819    .835    .851    .856
              31    PC    .860    .868    .876    .888    .910    .926    .937    .950    .970    .976
              32    PC    .982    .985    .987    .989    .990    .993    .993    .994    .995    .998
              33    PC    .998    .999   1.00
              34    LS       0      88
              35    UD    .100
                    *
              36    KK   OF-E2
              37    BA   .0096
              38    LS       0      88
              39    UD   0.114
                    *
              40    KK   OP-D2
              41    BA   .0021
              42    LS       0      85
              43    UD   0.097
                    *
1                                        HEC-1 INPUT                                        PAGE  2
```

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

  44      KK    CI2A
  45      KM   COMBINES OFFISTE BASINS OF-E1, OF-E2, AND OP-D2.
  46      HC       3
          *

  47      KK   OF-E3
  48      BA   .0168
  49      LS       0      88
  50      UD   0.124
          *

  51      KK    CI2B
  52      KM   COMBINES CI2A AND OF-E3.
  53      HC       2
          *

  54      KK   OF-E4
  55      BA   .0625
  56      LS       0      85
  57      UD    .189
          *

  58      KK    CI2C
  59      KM   COMBINES CI2B AND OF-E4.
  60      HC       2
          *

  61      KK   OF-E5
  62      BA   .0046
  63      LS       0      63
  64      UD   0.130
          *

  65      KK    CI2D
  66      KM   COMBINES CI2C AND OF-E5.
  67      HC       2
          *

  68      KK  RTCI2D
  69      KM   ROUTE CI2D THROUGH OF-E6 TO CI2E
  70      RD    0850     .03    .013            TRAP
          *

  71      KK   OF-E6
  72      BA   .0364
  73      LS       0      83
  74      UD   0.164
          *
1                                   HEC-1 INPUT                                  PAGE  3

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

  75      KK   OP-D1
  76      BA   .0016
  77      LS       0      78
  78      UD    .101
          *

  79      KK    CI2E
  80      KM   COMBINES RTCI2D, OF-E6, AND OP-D1.
  81      HC       3
          *

  82      KK   OF-E7
  83      BA   .1059
  84      LS       0      86
  85      UD   0.156
          *

  86      KK    CI2F
  87      KM   COMBINES CI2E AND OF-E7.
  88      HC       2
          *

  89      KK   GOAN
  90      KM   Base flow of 157 cfs that comes from Regional Facility GOAN 0044.
  91      BA   .0001
  92      BF     157
  93      LS       0      01
  94      UD   .0001
          *

  95      KK   DUMMY
  96      KM   Dummy card to reset baseflow and has no flow.
  97      BA   .0001
  98      BF     .00
  99      LS       0      01
```

```
          100          UD   .0001
                       *

          101          KK    CI2G
          102          KM   COMBINES CI2F, GOAN AND DUMMY.
          103          HC       3
                       *

          104          KK   ON-D1
          105          BA   .0037
          106          LS       0      94
          107          UD    .068
                       *
1                                        HEC-1 INPUT                                                PAGE  4

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


          108          KK   ON-D2
          109          BA   .0037
          110          LS       0      94
          111          UD   0.067
                       *

          112          KK   ON-D3
          113          BA   .0024
          114          LS       0      94
          115          UD   0.050
                       *

          116          KK    CI2L
          117          KM   COMBINES ONSITE BASINS ON-D1, ON-D2, AND ON-D3.
          118          HC       3
                       *

          119          KK    DIV1
          120          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
          121          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
          122          KM   DIV1 runoff amount flows south and combine with ON-D4 and the remaining flow
          123          KM             (D1) is captured by Drop inlets 1 and 2
          124          DT      D1
          125          DI      11     23
          126          DQ       6     10
                       *

          127          KK   ON-D4
          128          BA   .0033
          129          LS       0      91
          130          UD    .077
                       *

          131          KK    CI2M
          132          KM   COMBINES DIV1 AND ON-D4.
          133          HC       2
                       *

          134          KK    DIV2
          135          KM   DIVERSION (PROVIDE DISCRIPTION HERE, THIS IS A TYP. DIVERSION CARD)
          136          KM   ('DT' IS NAME OF WHAT YOU ARE DIVERTING;'DI' IS THE TOTAL FLOW; THE 'DQ' CARD
          137          KM   DIV2 runoff amount flows south and combine with ON-D5 and the remaining flow
          138          KM          (D2) flows east
          139          DT      D2
          140          DI      08     19
          141          DQ       3     08
                       *

          142          KK   ON-D5
          143          BA   .0100
          144          LS       0      88
          145          UD    .118
                       *
1                                        HEC-1 INPUT                                                PAGE  5

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


          146          KK    CI2H
          147          KM   COMBINES DIV2, ON-D5.
          148          HC       2
                       *

          149          KK    CI2I
          150          KM   COMBINES CI2G, CI2H.
          151          HC       2
                       *

          152          KK  ON-D4A
          153          BA   .0005
          154          LS       0      94
          155          UD   0.074
                       *
```

```
156          KK   ON-D6
157          BA   .0160
158          LS      0      87
159          UD   0.136
             *

160          KK   RETD2
161          KM   RETRIEVE D2 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
162          KM   The flow D2 enters onto ON-D6
163          DR      D2
             *

164          KK    CI2J
165          KM   COMBINES ON-D4A, ON-D6 AND D2.
166          HC       3
             *

167          KK   ON-D7
168          BA   .0017
169          LS      0      84
170          UD   0.066
             *

171          KK   ST-D3
172          BA   .0011
173          LS      0      98
174          UD    .050
             *

175          KK    CI2K
176          KM   COMBINES CI2I, CI2J, ON-D7, ST-D3.
177          HC       4
             *
1                                      HEC-1 INPUT                                    PAGE  6

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

178          KK   OF-E8
179          BA   .0066
180          LS      0      66
181          UD   0.133
             *

182          KK   36LAT
183          KM   The 36" RCP lateral flow from south of Tropical Parkway
184          KM   which gets existing into 10' X 5' RCB under Shaumber
185          KM   Road. Flow referenced from Shaumber Road Study.
186          BA   .0001
187          BF      40
188          LS      0      01
189          UD   .0001
             *

190          KK   DUMMY
191          KM   Dummy card to reset baseflow and has no flow.
192          BA   .0001
193          BF     .00
194          LS      0      01
195          UD   .0001
             *

196          KK    CI2Q
197          KM   COMBINES CI2K, OF-E8, 36LAT, AND DUMMY.
198          HC       4
             *

199          KK   OF-E9
200          BA   .0086
201          LS      0      66
202          UD   0.194
             *

203          KK    CI2R
204          KM   COMBINES CI2Q and OF-E9.
205          HC       2
             *

206          KK   ST-E1
207          BA   .0009
208          LS      0      88
209          UD   0.100
             *

210          KK   ST-D2
211          BA   .0013
212          LS      0      98
213          UD   0.050
             *
1                                      HEC-1 INPUT                                    PAGE  7
```

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

           214          KK    CI2P
           215          KM   COMBINES OFFISTE BASIN ST-E1 AND ONSITE BASIN ST-D2.
           216          HC       2
                        *

           217          KK  ON-D1A
           218          BA   .0009
           219          LS       0      94
           220          UD    .050
                        *

           221          KK  ON-D2A
           222          BA   .0008
           223          LS       0      94
           224          UD   0.050
                        *

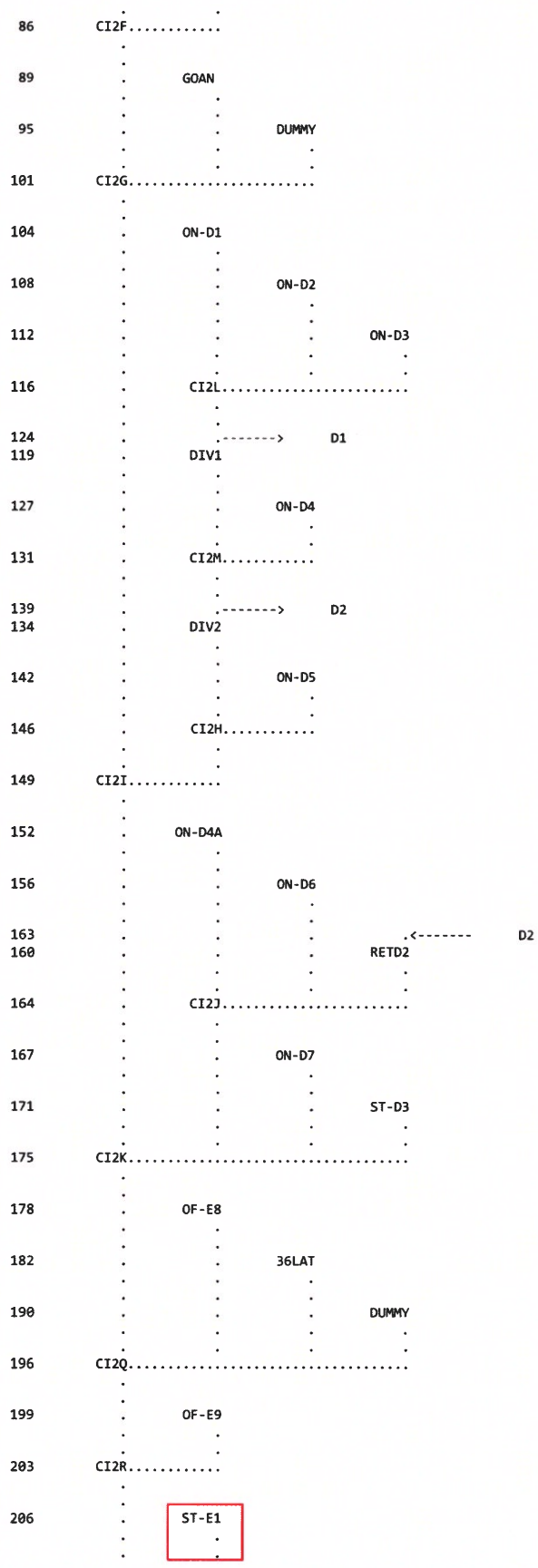
           225          KK  ON-D3A
           226          BA   .0004
           227          LS       0      94
           228          UD   0.052
                        *

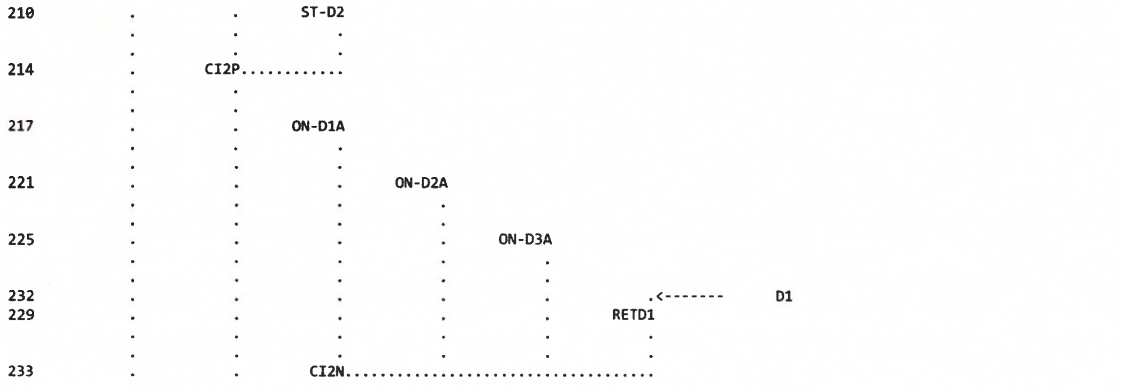
           229          KK   RETD1
           230          KM   RETRIEVE D1 - (THIS CARD RETRIEVES THE DIVERTED FLOW)
           231          KM   The flow D1 combines with ON-D1A, ON-D2A, and ON-D3A.
           232          DR      D1
                        *

           233          KK    CI2N
           234          KM   COMBINES ON-D1A, ON-D2A, ON-D3A, D1.
           235          HC       4
                        *
                        *
                        *
           236          ZZ
1
                SCHEMATIC DIAGRAM OF STREAM NETWORK
 INPUT
  LINE      (V) ROUTING          (--->) DIVERSION OR PUMP FLOW

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

      22     OF-E1
                .
                .
      36        .       OF-E2
                .           .
                .           .
      40        .           .       OP-D2
                .           .           .
                .           .           .
      44     CI2A.....................
                .
                .
      47        .       OF-E3
                .           .
                .           .
      51     CI2B............
                .
                .
      54        .       OF-E4
                .           .
                .           .
      58     CI2C............
                .
                .
      61        .       OF-E5
                .           .
                .           .
      65     CI2D............
                V
                V
      68    RTCI2D
                .
                .
      71        .       OF-E6
                .           .
                .           .
      75        .           .       OP-D1
                .           .           .
                .           .           .
      79     CI2E.....................
                .
                .
      82        .       OF-E7
                .           .
```


86 CI2F
89 GOAN
95 DUMMY
101 CI2G
104 ON-D1
108 ON-D2
112 ON-D3
116 CI2L
124 D1
119 DIV1
127 ON-D4
131 CI2M
139 D2
134 DIV2
142 ON-D5
146 CI2H
149 CI2I
152 ON-D4A
156 ON-D6
163 D2
160 RETD2
164 CI2J
167 ON-D7
171 ST-D3
175 CI2K
178 OF-E8
182 36LAT
190 DUMMY
196 CI2Q
199 OF-E9
203 CI2R
206 ST-E1



(***) RUNOFF ALSO COMPUTED AT THIS LOCATION

```
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   08MAR20  TIME  14:05:59   *                    *          (916) 756-1104               *
 *                                       *                    *                                       *
 *****************************************                    *****************************************
```

```
                          <><><><><><><><><><><><><><><><><><><><>
                            CENTENNIAL HEIGHTS TOWNHOMES
                            HYDROLOGIC MODEL
                            --------------------------

                            10-YR AND 100-YR STORM EVENT
                            --------------------------
                            HORROCKS ENGINEERING
                            PHASE 2 INTERIM CONDITION
                            FILE: INT PH2.DAT
                            PROJECT No: NV-1826-1907
                            DATE:  MARCH 07 2020
                          <><><><><><><><><><><><><><><><><><><><>

                           ---> 6-HOUR / SDN 3 <---


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

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

                   COMPUTATION INTERVAL     .08 HOURS
                       TOTAL TIME BASE   24.92 HOURS

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

     JP         MULTI-PLAN OPTION
                      NPLAN          1  NUMBER OF PLANS

     JR         MULTI-RATIO OPTION
                    RATIOS OF PRECIPITATION
                    .55      1.00
1

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

OPERATION	STATION	AREA	PLAN		RATIOS APPLIED TO PRECIPITATION RATIO 1	RATIO 2
					.55	1.00
HYDROGRAPH AT						
+	OF-E1	.01	1	FLOW	5.	13.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	OF-E2	.01	1	FLOW	7.	16.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OP-D2	.00	1	FLOW	1.	3.
				TIME	3.50	3.50
3 COMBINED AT						
+	CI2A	.02	1	FLOW	13.	32.
				TIME	3.58	3.50
HYDROGRAPH AT						
+	OF-E3	.02	1	FLOW	11.	28.
				TIME	3.58	3.58
2 COMBINED AT						
+	CI2B	.04	1	FLOW	24.	59.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E4	.06	1	FLOW	29.	83.
				TIME	3.67	3.58
2 COMBINED AT						
+	CI2C	.10	1	FLOW	53.	142.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E5	.00	1	FLOW	0.	2.
				TIME	4.92	3.58
2 COMBINED AT						
+	CI2D	.10	1	FLOW	53.	144.
				TIME	3.58	3.58
ROUTED TO						
+	RTCI2D	.10	1	FLOW	52.	142.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E6	.04	1	FLOW	16.	47.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OP-D1	.00	1	FLOW	1.	2.
				TIME	3.58	3.50
3 COMBINED AT						
+	CI2E	.14	1	FLOW	68.	191.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E7	.11	1	FLOW	59.	158.
				TIME	3.58	3.58
2 COMBINED AT						
+	CI2F	.25	1	FLOW	127.	349.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	GOAN	.00	1	FLOW	157.	157.
				TIME	.00	.00
HYDROGRAPH AT						
+	DUMMY	.00	1	FLOW	0.	0.
				TIME	.00	.00
3 COMBINED AT						
+	CI2G	.25	1	FLOW	284.	506.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ON-D1	.00	1	FLOW	4.	9.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ON-D2	.00	1	FLOW	4.	9.
				TIME	3.50	3.50
HYDROGRAPH AT						

+	ON-D3	.00	1	FLOW	3.	6.
				TIME	3.50	3.50
3 COMBINED AT						
+	CI2L	.01	1	FLOW	11.	23.
				TIME	3.50	3.50
DIVERSION TO						
+	D1	.01	1	FLOW	6.	11.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DIV1	.01	1	FLOW	5.	12.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ON-D4	.00	1	FLOW	3.	7.
				TIME	3.50	3.50
2 COMBINED AT						
+	CI2M	.01	1	FLOW	8.	19.
				TIME	3.50	3.50
DIVERSION TO						
+	D2	.01	1	FLOW	3.	8.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	DIV2	.01	1	FLOW	5.	11.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ON-D5	.01	1	FLOW	7.	17.
				TIME	3.58	3.58
2 COMBINED AT						
+	CI2H	.02	1	FLOW	12.	28.
				TIME	3.50	3.50
2 COMBINED AT						
+	CI2I	.27	1	FLOW	292.	531.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	ON-D4A	.00	1	FLOW	1.	1.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ON-D6	.02	1	FLOW	10.	26.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	RETD2	.00	1	FLOW	3.	8.
				TIME	3.50	3.50
3 COMBINED AT						
+	CI2J	.02	1	FLOW	13.	32.
				TIME	3.58	3.50
HYDROGRAPH AT						
+	ON-D7	.00	1	FLOW	1.	3.
				TIME	3.50	3.50
HYDROGRAPH AT						
+	ST-D3	.00	1	FLOW	2.	3.
				TIME	3.50	3.50
4 COMBINED AT						
+	CI2K	.29	1	FLOW	307.	566.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E8	.01	1	FLOW	0.	4.
				TIME	3.75	3.58
HYDROGRAPH AT						
+	36LAT	.00	1	FLOW	40.	40.
				TIME	.00	.00
HYDROGRAPH AT						
+	DUMMY	.00	1	FLOW	0.	0.
				TIME	.00	.00
4 COMBINED AT						
+	CI2Q	.30	1	FLOW	347.	609.
				TIME	3.58	3.58
HYDROGRAPH AT						
+	OF-E9	.01	1	FLOW	0.	4.
				TIME	3.83	3.67

```
  2 COMBINED AT
+                    CI2R       .30     1   FLOW          348.      613.
                                            TIME          3.58      3.58

 HYDROGRAPH AT
+                   ST-E1       .00     1   FLOW            1.        2.
                                            TIME          3.50      3.50

 HYDROGRAPH AT
+                   ST-D2       .00     1   FLOW            2.        3.
                                            TIME          3.50      3.50

  2 COMBINED AT
+                    CI2P       .00     1   FLOW            2.        5.
                                            TIME          3.50      3.50

 HYDROGRAPH AT
+                  ON-D1A       .00     1   FLOW            1.        2.
                                            TIME          3.50      3.50

 HYDROGRAPH AT
+                  ON-D2A       .00     1   FLOW            1.        2.
                                            TIME          3.50      3.50

 HYDROGRAPH AT
+                  ON-D3A       .00     1   FLOW            0.        1.
                                            TIME          3.50      3.50

 HYDROGRAPH AT
+                   RETD1       .00     1   FLOW            6.       11.
                                            TIME          3.50      3.50

  4 COMBINED AT
+                    CI2N       .00     1   FLOW            9.       17.
                                            TIME          3.50      3.50
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
            RTCI2D  MANE          .84     52.76    215.67       .63      5.00     51.90    215.00         .63

CONTINUITY SUMMARY (AC-FT) - INFLOW= .3450E+01 EXCESS= .0000E+00 OUTFLOW= .3450E+01 BASIN STORAGE= .1169E-03 PERCENT ERROR=    .0


          FOR PLAN = 1  RATIO=  .00
            RTCI2D  MANE          .65    142.69    215.81      1.74      5.00    141.56    215.00        1.74

CONTINUITY SUMMARY (AC-FT) - INFLOW= .9529E+01 EXCESS= .0000E+00 OUTFLOW= .9529E+01 BASIN STORAGE= .1185E-03 PERCENT ERROR=    .0

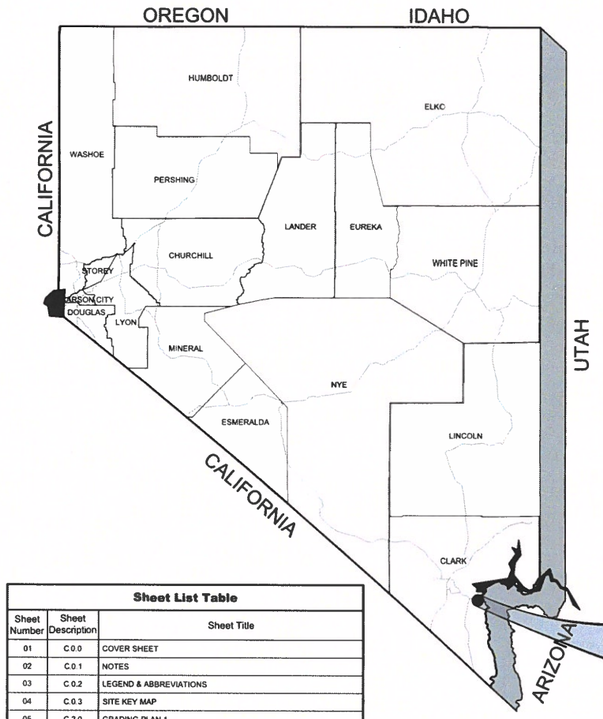


*** NORMAL END OF HEC-1 ***
```

Referenced Plan Sheets

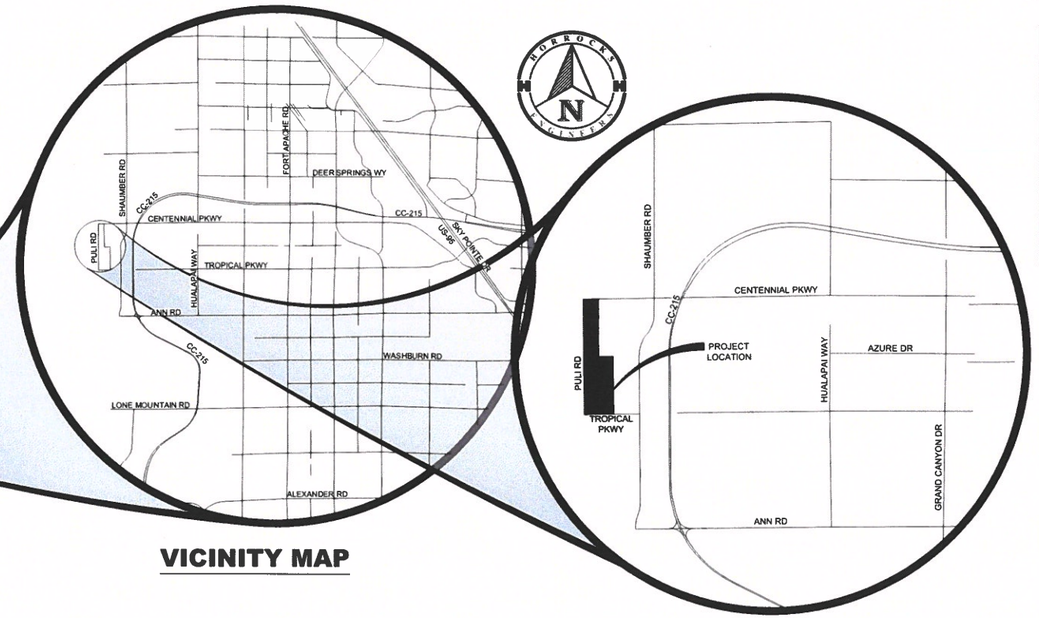
CENTENNIAL HEIGHTS TOWNHOMES
PHASE 1

located in
CITY OF LAS VEGAS
APN # 126-25-201-010



NEVADA STATE MAP

Sheet List Table		
Sheet Number	Sheet Description	Sheet Title
01	C.0.0	COVER SHEET
02	C.0.1	NOTES
03	C.0.2	LEGEND & ABBREVIATIONS
04	C.0.3	SITE KEY MAP
05	C.2.0	GRADING PLAN 1
06	C.2.1	GRADING PLAN 2
07	C.2.2	GRADING PLAN 3
08	C.2.3	GRADING PLAN 4
09	C.2.4	GRADING PLAN 5
10	C.2.5	GRADING PLAN 6
11	C.2.6	GRADING PLAN 7
12	C.2.7	GRADING PLAN 8
13	C.2.8	GRADING PLAN 9
14	C.2.9	GRADING PLAN 10
15	C.2.10	GRADING PLAN 11
16	C.2.11	GRADING PLAN 12
17	C.2.12	GRADING PLAN 13
18	C.2.13	GRADING PLAN 14
19	C.2.14	GRADING PLAN 15
20	C.2.15	GRADING PLAN 16
21	C.2.16	GRADING PLAN 17
22	C.5.0	ST A PLAN & PROFILE (STA 9+50 TO STA 13+50)
23	C.5.1	ST B PLAN & PROFILE (STA 9+75 TO STA 14+00) ST B2 PLAN & PROFILE (STA 9+75 TO STA 12+00)
24	C.5.2	ST C PLAN & PROFILE (STA 16+00 TO STA 23+50)
25	C.5.3	ST C PLAN & PROFILE (STA 9+50 TO STA 17+00)
26	C.5.4	ST D, E, & F PLAN & PROFILE (STA 9+75 TO STA 12+00)
27	C.5.5	ST G PLAN & PROFILE (STA 9+50 TO STA 13+50)
28	C.5.6	ST H PLAN & PROFILE (STA 28+50 TO STA 36.00)
29	C.5.7	ST H PLAN & PROFILE (STA 21+50 TO STA 29+00)
30	C.5.8	ST H PLAN & PROFILE (STA 15+00 TO STA 22+50)
31	C.5.9	ST H PLAN & PROFILE (STA 9+00 TO STA 15+50)
32	C.5.10	ST I, J, & K PLAN & PROFILE (STA 9+75 TO STA 12+00)
33	C.5.11	ST L PLAN & PROFILE (STA 9+75 TO STA 12+00) CENTENNIAL PKWY PLAN & PROFILE (STA 9+50 TO STA 14+00)
34	C.5.12	TROPICAL PKWY PLAN & PROFILE (STA 5+50 TO STA 11+50)
35	C.5.13	TROPICAL PKWY PLAN & PROFILE (STA 10+50 TO STA 15+50)
36	C.5.14	TROPICAL PKWY PLAN & PROFILE (STA 15+00 TO STA 19+50))
37	C.5.15	CHANNEL PLAN & PROFILE (STA 11+00 TO STA 18+50)
38	C.5.16	CHANNEL PLAN & PROFILE (STA 17+50 TO STA 25+00)
39	C.5.17	CHANNEL PLAN & PROFILE (STA 24+50 TO 32.00)
40	C.5.18	CHANNEL PLAN & PROFILE (STA 31+00 TO STA 38+00)
41	C.5.19	STORM DRAIN 3 PLAN & PROFILE (STA 9+50 TO STA 12+00) STORM DRAIN 5 PLAN & PROFILE (STA 9+50 TO STA 12+50)
42	C.5.20	SHEEP MOUNTAIN CHANNEL 1 (STA 0+00 TO STA 7+75)
43	C.5.21	SHEEP MOUNTAIN CHANNEL 2 (STA 7+75 TO STA 15+00)
44	C.6.0	DETAIL SHEET 1
45	C.6.1	DETAIL SHEET 2



VICINITY MAP

PROJECT SITE

Call before you dig 4-ONE-CALL MUTUAL UNDERGROUND UTILITY LINES IT'S EASY! Call 811 OR 1-800-227-2600

HIGH-VOLTAGE OVERHEAD POWER LINES - IT'S COST-LY CALL BEFORE YOU DIG OVERHEAD 1-702-227-2929

FAST Call before you UnderGround 1-702-432-5300 REGIONAL PUBLIC TRANSPORTATION SYSTEM OF TRANSPORTATION

FLOOD ZONE:

THIS SITE IS LOCATED IN A ZONE 'X', AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN AND PARTIALLY IN A SHADED ZONE 'X', AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE OF FLOOD PER THE FLOOD INSURANCE RATE MAP COMMUNITY PANEL 32003C2565F, CLARK COUNTY, NEVADA DATED NOVEMBER 16, 2011, REVISED TO REFLECT LOMR DATED OCTOBER 18, 2018.

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
NAVD 88

BASIS OF BEARING

NORTH 00°37'29" WEST, BEING THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.,CLARK COUNTY, NEVADA, AS SHOWN ON THE PLAT OF CONSTELLATION ESTATES, RECORDED IN BOOK 102, PAGE 92, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

LEGAL DESCRIPTION:

A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.D., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE WEST HALF (W 1/2) OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., TOGETHER WITH:

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.

SITE DATA

APN NUMBER:	124-25-201-010
GROSS AREA:	20.7± ACRES
ZONING:	R-TH
TOTAL COMMON LOT COUNT:	2 LOTS
TOTAL RESIDENTIAL LOT COUNT:	214 LOTS
TOTAL DENSITY:	10.34 DU/AC

UTILITY DISCLAIMER NOTE:

EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE AT THE CONTRACTORS RESPONSIBILITY TO DETERMINE THE EACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTIING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPPER LOCATIONS.

NOTE:

FOR ALL REFERENCES TO FINAL MAP #_____ SHOWN THROUGHOUT THIS SET OF PLANS, SEE PLAT BOOK ___ PAGE ___.

APPROVALS

CITY OF LAS VEGAS FIRE DEPARTMENT — DATE

MIKE JANSEN — DATE
CITY ENGINEER - CITY OF LAS VEGAS
APPROVAL OF THESE PLANS BY THE CITY ENGINEER IS LIMITED TO THOSE IMPROVEMENTS CONSTRUCTED IN THE DEDICATED RIGHT-OF-WAY, AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE 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 STANDARD IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS, CLARK COUNTY AREA, NEVADA.

SOUTHWEST GAS CORPORATION — DATE

COX COMMUNICATIONS LAS VEGAS, INC — DATE

CENTRAL TELEPHONE COMPANY DBA CENTURY LINK — DATE
THE CENTURY LINK 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.

NV ENERGY — DATE
NEVADA ENERGY ACKNOWLEDGES THAT WE HAVE RECEIVED YOUR PLANS AND WILL PROVIDE SERVICE TO ALL ELECTRICAL NEEDS ASSOCIATED WITH THIS PROJECT. NEVADA POWER COMPANY RESERVES THE RIGHT TO ADDRESS ANY 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.

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER — DATE
(PROJECT# _____). SHEETS: _____

OWNER:

HARMONY HOMES
8912 SPANISH RIDGE AVE. STE 200
LAS VEGAS, NV 89148
PHONE: (702)570-7213
CONTACT: MATT ROSENBERG
EMAIL: MROSENBERG@HARMONYHOMES.COM

DEVELOPER:

HARMONY HOMES
8912 SPANISH RIDGE AVE. STE 200
LAS VEGAS, NV 89148
PHONE: (702)570-7213
CONTACT: MATT ROSENBERG
EMAIL: MROSENBERG@HARMONYHOMES.COM

ENGINEER:

HORROCKS ENGINEERS
1401 N. GREEN VALLEY PKWY., STE 160
HENDERSON, NV 89074
PHONE: (702)966-4063
CONTACT: LARRY BITTON, P.E.
EMAIL: LARRYB@HORROCKS.COM

UTILITY CONTACTS

WATER
LAS VEGAS VALLEY WATER DISTRICT
1001 S. VALLEY VIEW BLVD.
LAS VEGAS, NV 89107
(702) 870-2011

POWER
NEVADA ENERGY
7155 LINDELL RD.
LAS VEGAS, NV 89118
(702) 402-8400

NATURAL GAS
SOUTHWEST GAS CORPORATION
6355 SHATZ ST.
LAS VEGAS, NV 89115
(877) 860-6020

SEWER
CITY OF LAS VEGAS
333 N. RANCHO DR.
LAS VEGAS, NV 89106
(702) 229-6301

TELEPHONE
CENTURY LINK
2340 E. TROPICANA AVE.
LAS VEGAS, NV 89119
(877) 862-9343

CATV SERVICE
COX COMMUNICATIONS
LAS VEGAS INC.
819 E. OGDEN AVE.
LAS VEGAS, NV 89010
(702) 883-4000

EARTHWORKS

CUT: 71,092 CY
FILL: 123,475 CY
NET: 52,383 CY (FILL)

ESTIMATED QUANTITY FROM EXISTING TO FINISHED GRADES. PER SOILS REPORT BY GEOTEK, INC., PROJECT #15256-LV, DATED JAN. 9, 2020

AREA OF DISTURBANCE:

26.76 AC. ONSITE (PRIVATE)
7.20 AC. OFFSITE (PUBLIC)

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

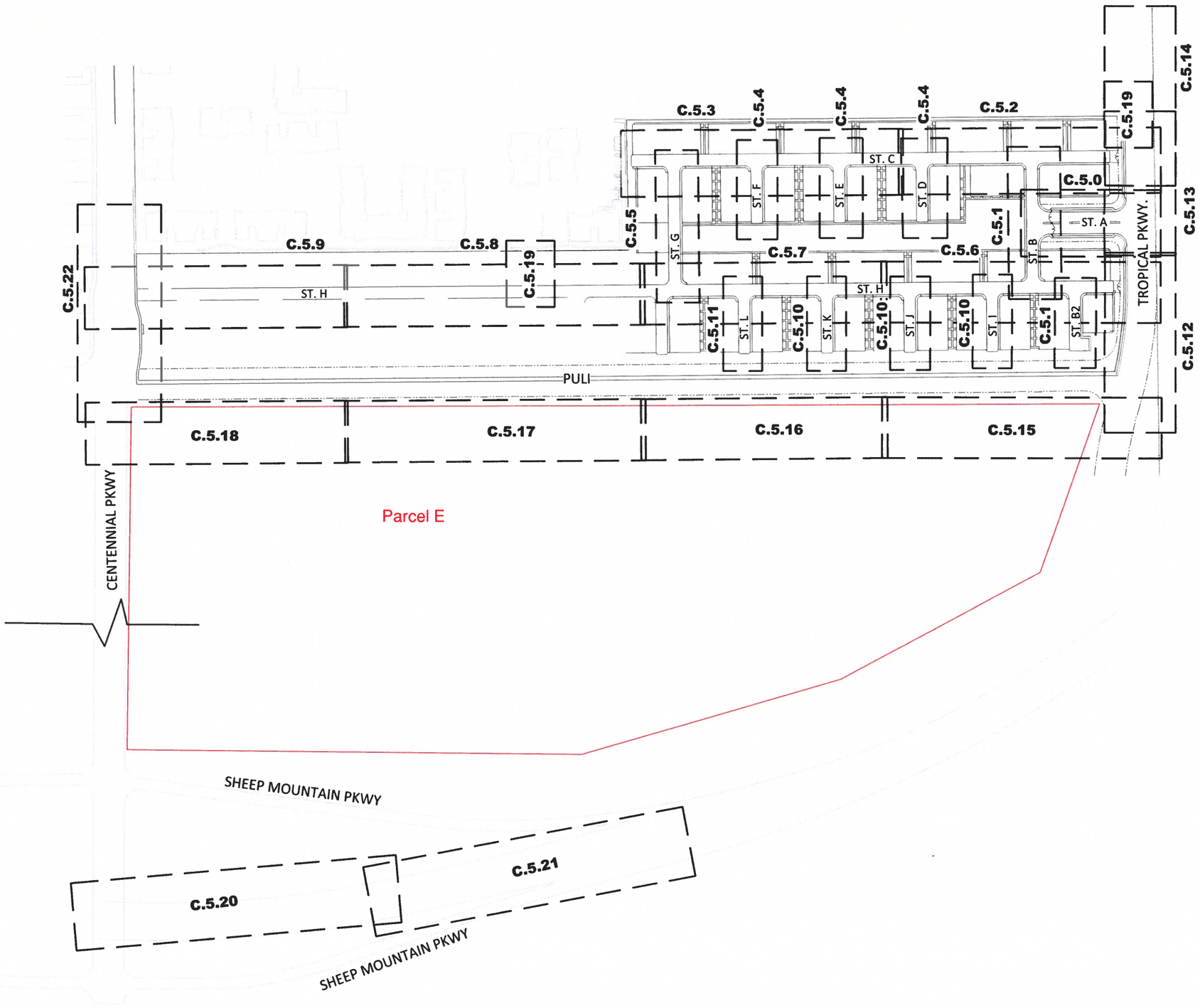
DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY M. BITTON
EXP 12-31-20
CIVIL
No. 0088
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
COVER SHEET

C.0.0

PAGE 01



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Henderson, NV 89074
(702) 968-4063
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0 1 2

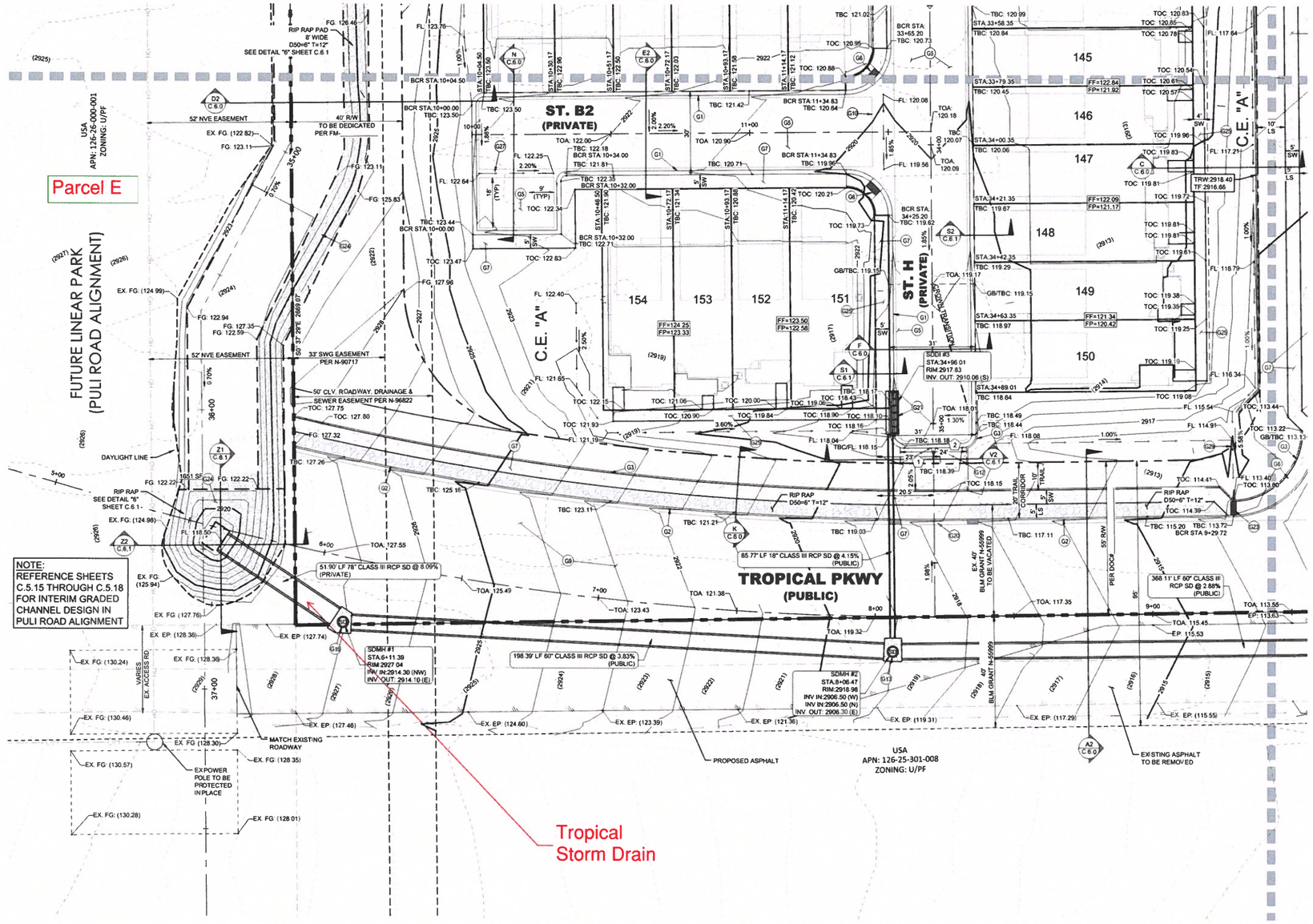
REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

PROFESSIONAL ENGINEER STATE OF NEVADA
LARRY M. BITTON
EXP 12-31-20
CIVIL
No. 0018
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
SITE KEY MAP

C.0.3
PAGE 04



NOTE:
REFERENCE SHEETS C.5.15 THROUGH C.5.18 FOR INTERIM GRADED CHANNEL DESIGN IN PULI ROAD ALIGNMENT

LEGAL DESCRIPTION:

A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.D., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA. MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE WEST HALF (W 1/2) OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., TOGETHER WITH:

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.

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

CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

Call before you UnderGround
1-702-432-5300

BASIS OF BEARING

NORTH 00°37'29" WEST, BEING THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON THE PLAT OF CONSTELLATION ESTATES, RECORDED IN BOOK 102, PAGE 92, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2.956.44
NAVD 88

FLOOD ZONE:

THIS SITE IS LOCATED IN A ZONE 'X', AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN AND PARTIALLY IN A SHADED ZONE 'X', AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE OF FLOOD PER THE FLOOD INSURANCE RATE MAP COMMUNITY PANEL 32003C1750E, CLARK COUNTY, NEVADA DATED NOVEMBER 16, 2011, REVISED TO REFLECT LOMR DATED OCTOBER 18, 2018.

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

NOTE:
ALL COMMON ELEMENTS ARE PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA.

NOTE:
ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA.

NOTE:
ADD 2900' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

SIGHT VISIBILITY ZONE NOTE:

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

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO: 15256-LV
   DATE: JANUARY 9, 2020
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: 71,092 CY
   NET FILL: 123,475 CY
   TOTAL: 52,383 CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.

EASEMENT KEY NOTES:

1. 23' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED PER FINAL MAP.
2. 24' PUBLIC EMERGENCY ACCESS EASEMENT TO BE PRIVATELY MAINTAINED PER FINAL MAP.
3. PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY HOA PER FINAL MAP.

AREA OF DISTURBANCE

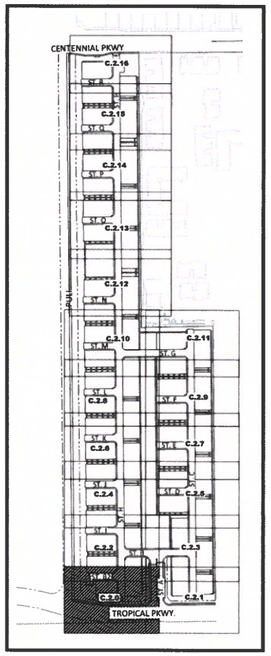
ONSITE: 26.76 AC.
OFFSITE: 7.20 AC.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5232

LARRY BITTON, P.E. NO. 0101159 DATE

KEY MAP
N.T.S.



GRADING KEY NOTES:

(G1) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2 S1
(G2) CONSTRUCT "L" TYPE CURB PER CCAUSD #216
(G3) CONSTRUCT "A" TYPE CURB PER CCAUSD #219
(G4) CONSTRUCT 10' TRANSITION FROM "L" TYPE CURB TO ROLL CURB PER DETAIL "1" ON SHEET C.6.1
(G5) CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE II AGG BASE
(G6) CONSTRUCT SIDEWALK RAMP "CASE I" PER CCAUSD #235
(G7) CONSTRUCT 5" CONCRETE SIDEWALK PER CCAUSD #234
(G8) CONSTRUCT 4" AC PAVEMENT OVER 4" TYPE II AGG BASE
(G9) CONSTRUCT 5.5" AC PAVEMENT OVER 6" TYPE II AGG BASE
(G10) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228
(G11) SAWCUT, TRENCH, BACKFILL, AND ASPHALT PATCH PER CCAUSD 500.3, 500.4, 500.5 & 503 (PATCH DIMENSIONS TO BE DETERMINED IN THE FIELD) PROPOSED SAWCUT TO BE AT LANE LINE
(G12) INSTALL WROUGHT IRON GATE PER CCAUSD #425 S1
(G13) INSTALL 60" TYPE II-SD STORM DRAIN MANHOLE PER CCAUSD #401 & 405.2
(G14) CONSTRUCT CURB OPENING PER DETAIL "2" OF SHEET C.6.1
(G15) INSTALL NEENAH 2501-G GRATED LID PER DETAIL "9" ON C.6.1
(G16) INSTALL STORM DRAIN JUNCTION STRUCTURE PER STRUCTURAL DRAWINGS.
(G17) EXISTING TO REMAIN. PROTECT IN PLACE.
(G18) INSTALL LANDSCAPING PER LANDSCAPE PLAN BY OTHERS
(G19) CONSTRUCT 5'X5' CONCRETE SIDEWALK PAD PER CCAUSD #234 FOR ADA TURNAROUND
(G20) CONSTRUCT DRIVEWAY PER CCAUSD #223 & 223.1
(G21) CONSTRUCT DROP INLET TYPE "CM2" PER CCAUSD #412.1 & 421. L=15'. D=8.20'
(G22) CONSTRUCT DROP INLET TYPE "CM2" PER CCAUSD #412.1 & 421. L=10'. D=7.95'
(G23) CONSTRUCT SIDEWALK UNDER DRAIN PER CCAUSD #236
(G24) INSTALL RIP-RAP D50=6", T=12" SUBGRADE @ 90% COMPACTION LENGTH AND WIDTH SPECIFIED ON PLAN
(G25) CONSTRUCT 4" CONCRETE SIDEWALK PER CCAUSD #234
(G26) CONSTRUCT BUS TURNOUT PER CCAUSD #234.1 & DETAIL "O" ON C.6.0
(G27) CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228
(G28) INSTALL 4" SIDEWALK DRAIN PIPE PER DETAIL "7" ON SHEET C.6.1
(G29) CONSTRUCT BLOCK WALL OPENING PER DETAIL "3" ON SHEET C.6.1
(G30) CONSTRUCT 24" WIDE CONCRETE FLUME PER DETAIL "5" ON SHEET C.6.1
(G31) CONSTRUCT 24"X36" BUBBLER STRUCTURE PER DETAIL "4" ON SHEET C.6.1

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1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 968-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS	
REV #	DATE

*SEE GENERAL NOTES SHEET

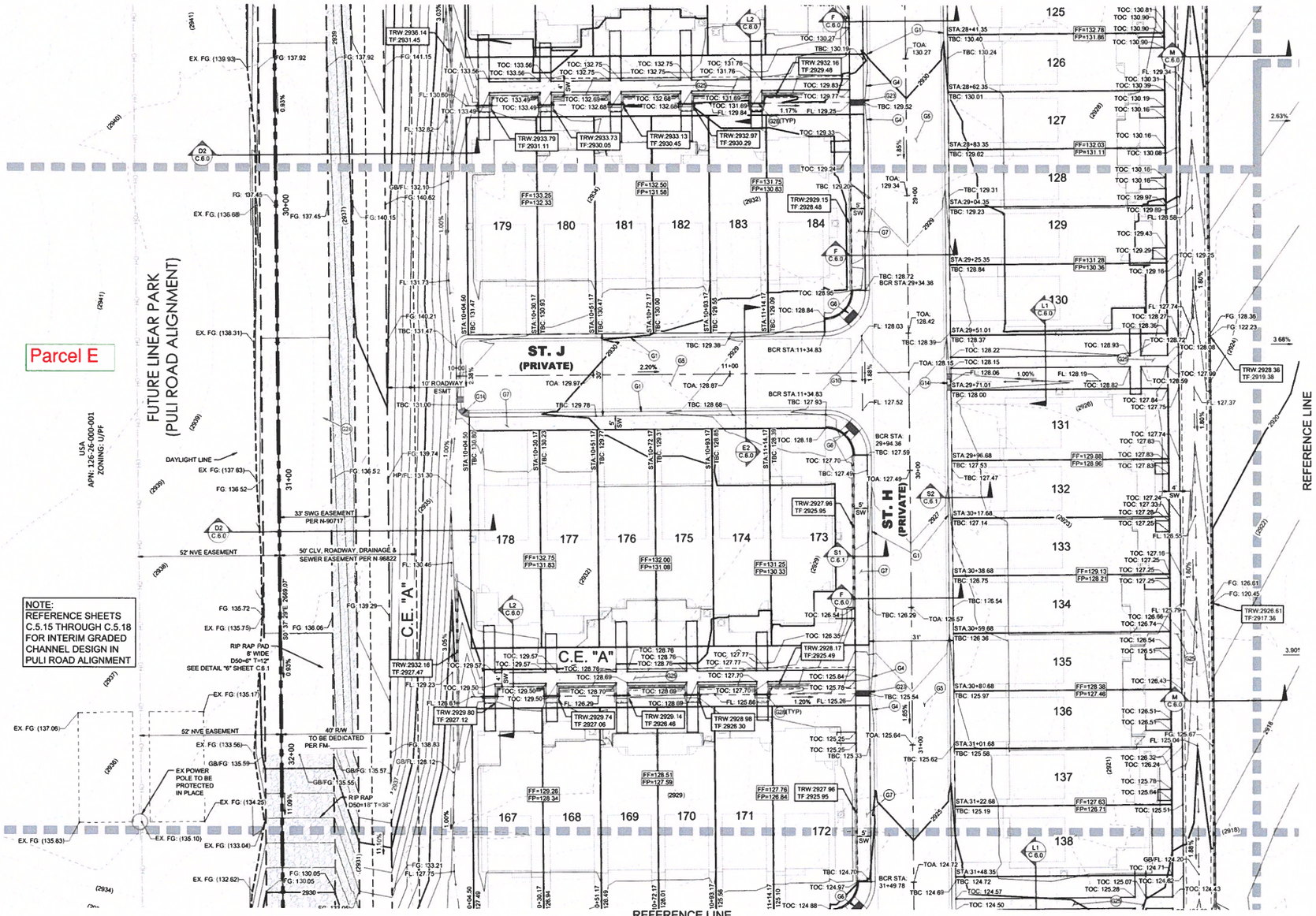
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DATE	4/29/2020
DESIGNED	SS
DRAWN	PMP
CHECKED	AD
PROJECT	NV-1949-1909

PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY W BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
GRADING PLAN 1

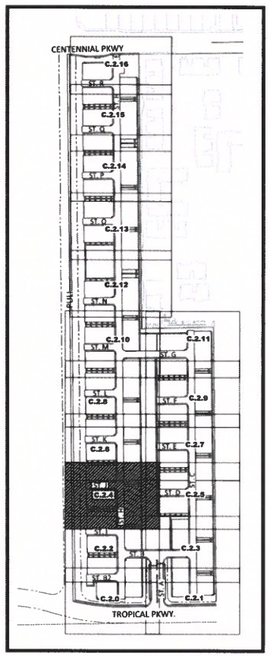
C.2.0

PAGE 05





KEY MAP
N.T.S.



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BASIS OF BEARING

NORTH 00°37'29" WEST, BEING THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON THE PLAT OF CONSTELLATION ESTATES, RECORDED IN BOOK 102, PAGE 92, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
NAVD 88

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Call before you UNDERGROUND FACILITIES ARE LOCATED Call 811 or 1-800-227-2600

POWER LINES MAY BE LOCATED CALL BEFORE YOU DIG OVERHEAD 1-702-227-2929

EAST Call before you UnderGround 1-702-432-5300

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

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

NOTE:
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NOTE:
ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA.

NOTE:
ADD 2900' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS.
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4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
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7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 1525S6-LV
   DATE: JANUARY 9, 2020
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: 71,092 CY
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   TOTAL: 52,383 CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.

EASEMENT KEY NOTES:

(1) 23' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED. PER FINAL MAP.
(2) 24' PUBLIC EMERGENCY ACCESS EASEMENT TO BE PRIVATELY MAINTAINED. PER FINAL MAP.
(3) PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY HOA. PER FINAL MAP.

AREA OF DISTURBANCE

ONSITE: 26.76 AC.
OFFSITE: 7.20 AC.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5232

LARRY BITTON, P.E. NO. 010159 DATE

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
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0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

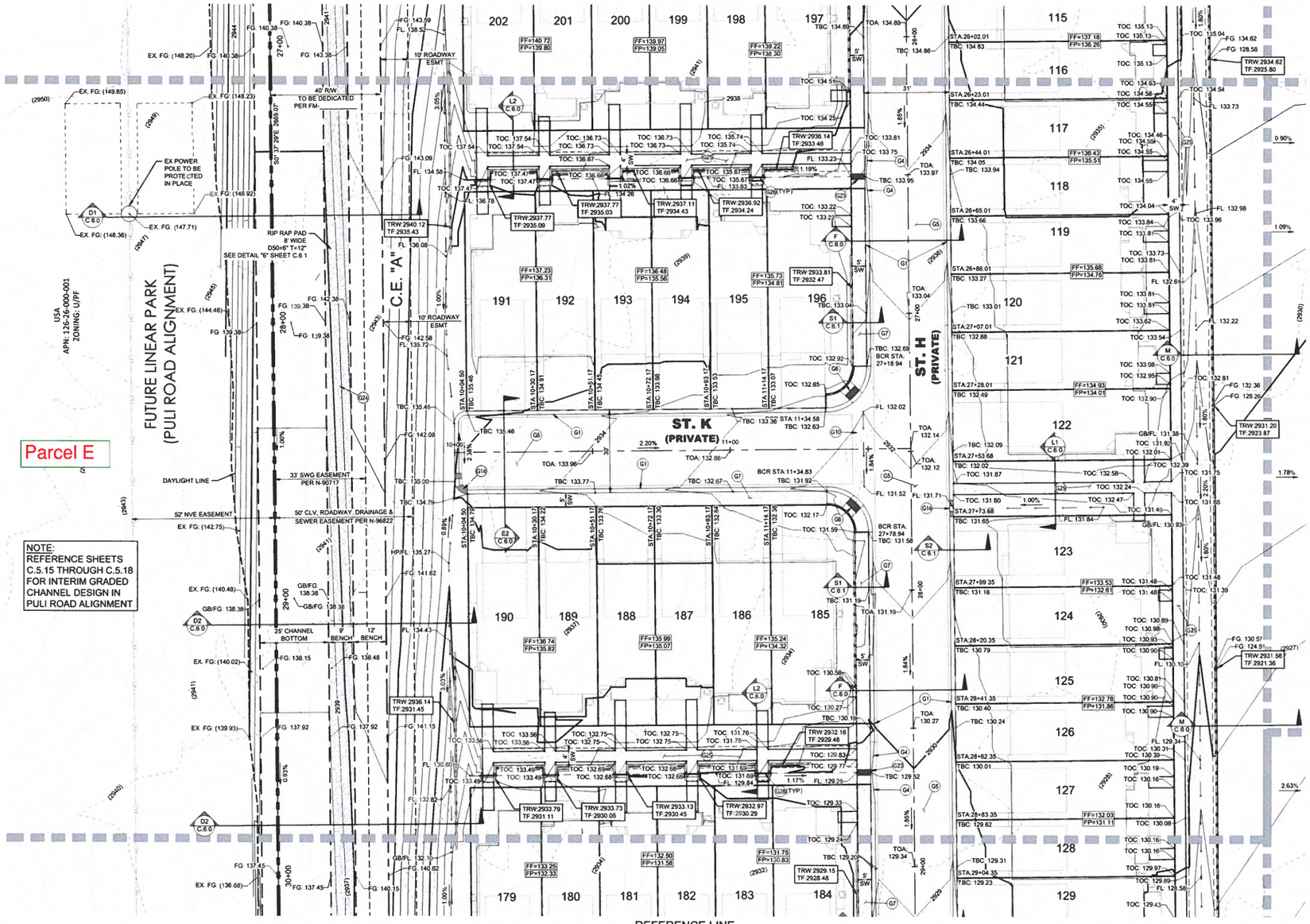
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DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

PROFESSIONAL ENGINEER-STATE OF NEVADA
LARRY W. BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
GRADING PLAN 5

C.2.4

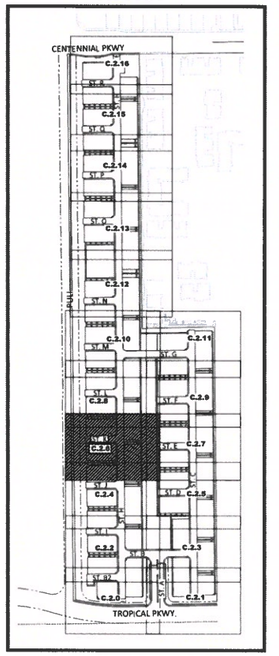
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SCALE: 1" = 20'

KEY MAP
N.T.S.



GRADING KEY NOTES:

(G1) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2 S1
(G2) CONSTRUCT "L" TYPE CURB PER CCAUSD #216
(G3) CONSTRUCT "A" TYPE CURB PER CCAUSD #219
(G4) CONSTRUCT 10' TRANSITION FROM "L" TYPE CURB TO ROLL CURB PER DETAIL "1" ON SHEET C.6.1
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(G6) CONSTRUCT SIDEWALK RAMP "CASE I" PER CCAUSD #235
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(G12) INSTALL WROUGHT IRON GATE PER CCAUSD #425 S1
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(G24) INSTALL RIP-RAP D50=6", T=12" SUBGRADE @ 90% COMPACTION LENGTH AND WIDTH SPECIFIED ON PLAN
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(G31) CONSTRUCT 24"X36" BUBBLER STRUCTURE PER DETAIL "4" ON SHEET C.6.1

EASEMENT KEY NOTES:

(1) 23' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED. PER FINAL MAP.
(2) 24' PUBLIC EMERGENCY ACCESS EASEMENT TO BE PRIVATELY MAINTAINED. PER FINAL MAP.
(3) PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY HOA. PER FINAL MAP.

LEGAL DESCRIPTION:

A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.B., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE WEST HALF (W 1/2) OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., TOGETHER WITH:

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.

BASIS OF BEARING

NORTH 00°37'29" WEST, BEING THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.,CLARK COUNTY, NEVADA, AS SHOWN ON THE PLAT OF CONSTELLATION ESTATES, RECORDED IN BOOK 102, PAGE 92, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
NAVD 88

FLOOD ZONE:

THIS SITE IS LOCATED IN A ZONE 'X', AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN AND PARTIALLY IN A SHADED ZONE 'X', AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE OF FLOOD PER THE FLOOD INSURANCE RATE MAP COMMUNITY PANEL 32003C1750E, CLARK COUNTY, NEVADA DATED NOVEMBER 16, 2011, REVISED TO REFLECT LOMR DATED OCTOBER 18, 2018.

SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

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

NOTE:
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NOTE:
ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA.

NOTE:
ADD 2900' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 15256-LV
   DATE: JANUARY 9, 2020
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT: 71,092 CY
   NET FILL: 123,475 CY
   TOTAL: 52,383 CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.

AREA OF DISTURBANCE

ONSITE: 26.76 AC.
OFFSITE: 7.20 AC.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5232

LARRY BITTON, P.E. NO. 010159 DATE

Call before you DIG
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1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 866-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS	
REV #	DATE

*SEE GENERAL NOTES SHEET

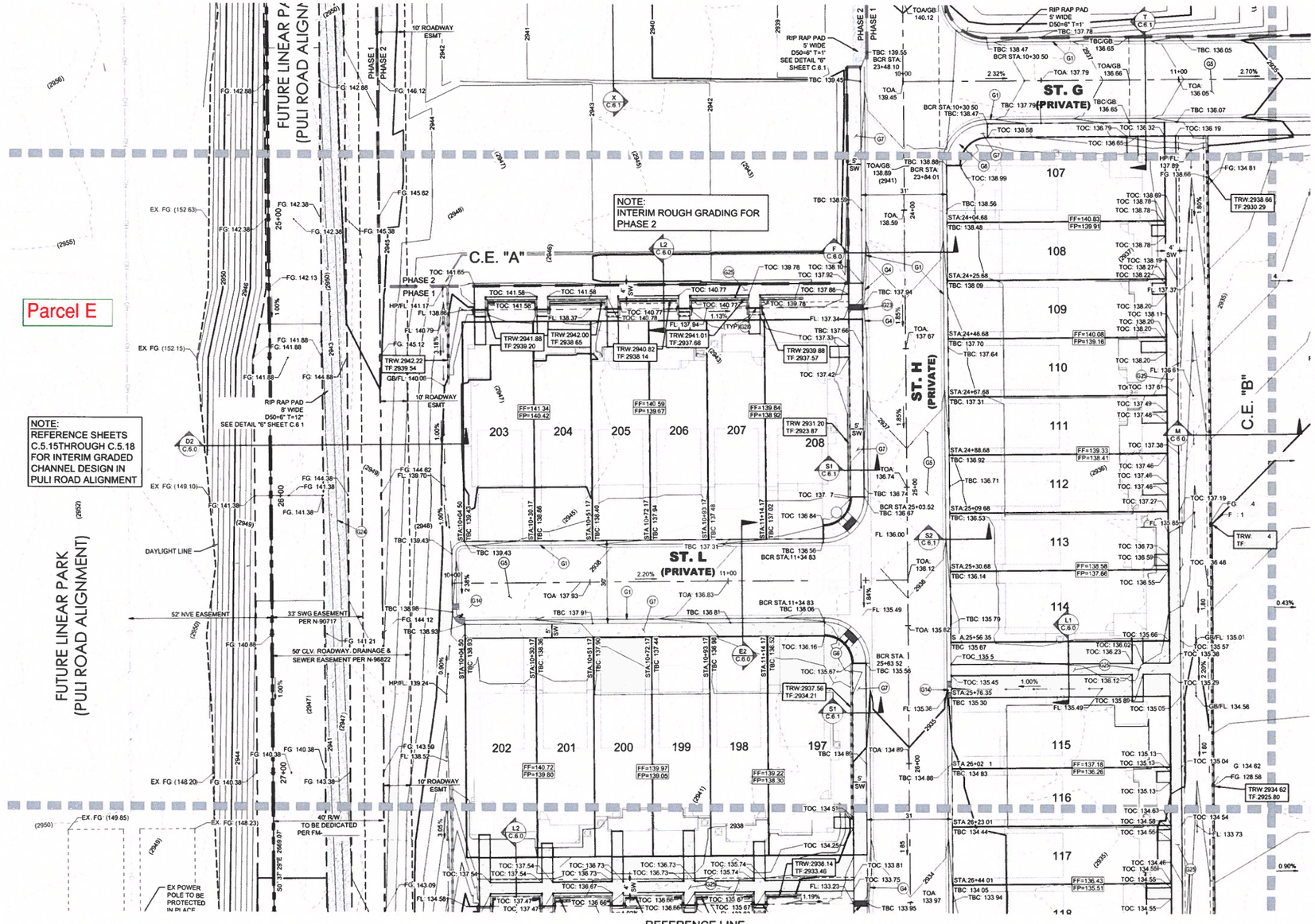
DRAWING INFO	
DATE	4/29/2020
DESIGNED	SS
DRAWN	PMP
CHECKED	AD
PROJECT	NV-1949-1909

PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY W. BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

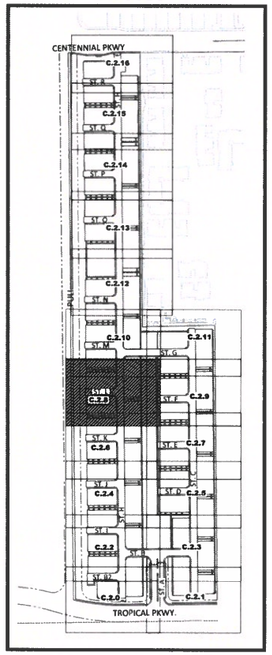
CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
GRADING PLAN 7

C.2.6

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KEY MAP
N.T.S.



SCALE: 1" = 20'

GRADING KEY NOTES:

- N TRUCT 30"ROL CURB PER CCAUSD #217.2 S1
- TRUCT "L" TYPE CURB PER CCAUSD #216
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BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
NAVD 88

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SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

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   PREPARED BY: GEOTEK INC.
   PROJECT NO.: 15256-LV
   DATE: JANUARY 9, 2020
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AREA OF DISTURBANCE

ONSITE:	26.76 AC.
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DRAINAGE CERTIFICATION:

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DS# 5232

LARRY BITTON, P.E. NO. 010159 DATE

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1-702-227-2929

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www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

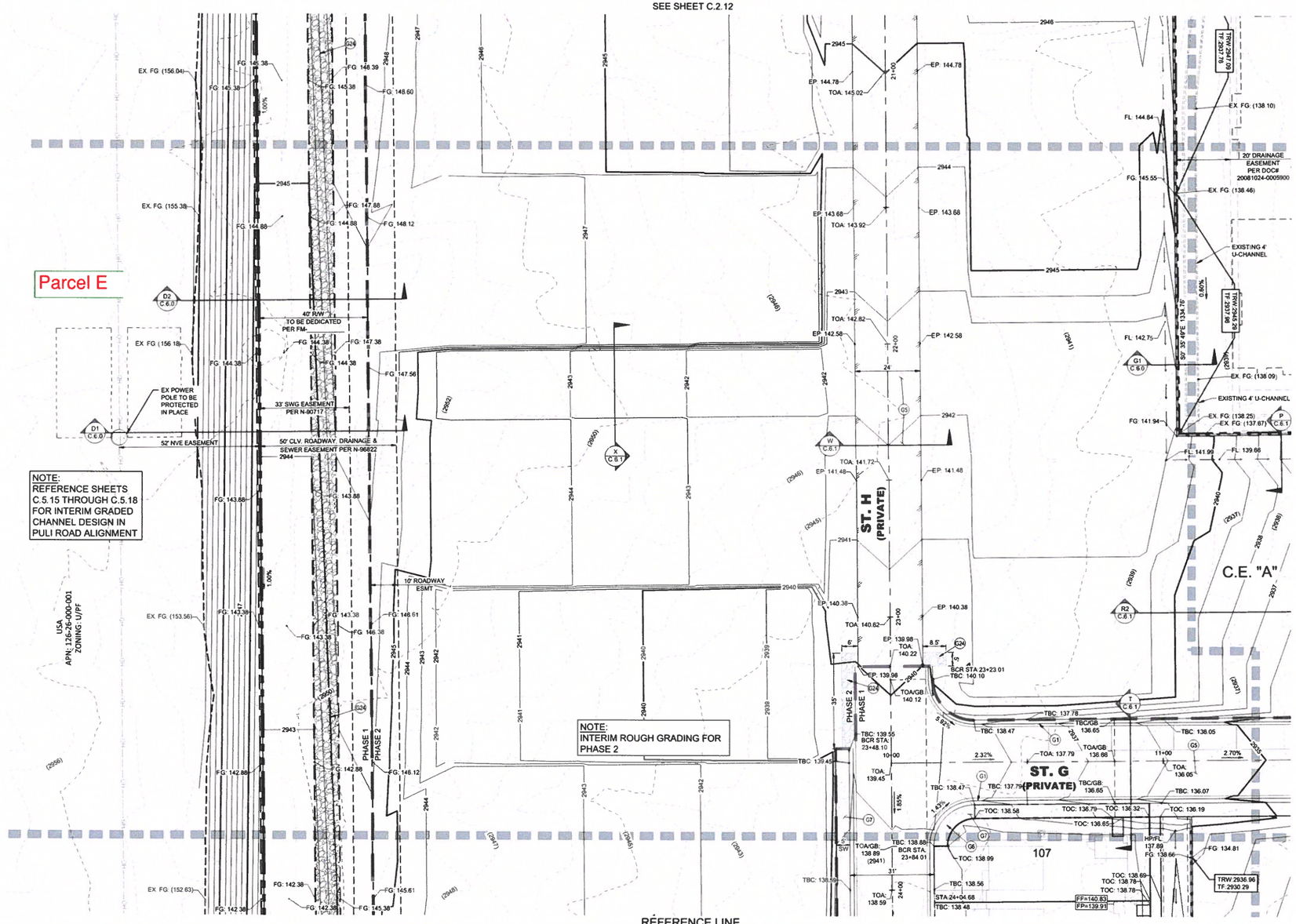
DRAWING INFO
DATE 4/29/2020
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PROJECT NV-1949-1909

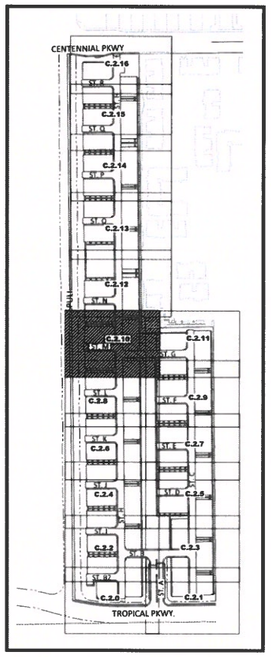
PROFESSIONAL ENGINEER-STATE OF NEVADA
LARRY W. BITTON
EXP 12-31-20
CIVIL
No. 010159
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
GRADING PLAN 9

C.2.8

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GRADING KEY NOTES:

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BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
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DS# 5232

LARRY BITTON, P.E. NO. 010159 DATE

Call before you Dig
ALWAYS DOTTED UNDERGROUND UTILITIES MUST BE LOCATED
Call 811 or 1-800-227-2600

CALL BEFORE YOU DIG OVERHEAD
1-702-227-2929

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

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
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REVISIONS
REV # | DATE

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
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PROJECT NV-1949-1909

*SEE GENERAL NOTES SHEET

PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY M. BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

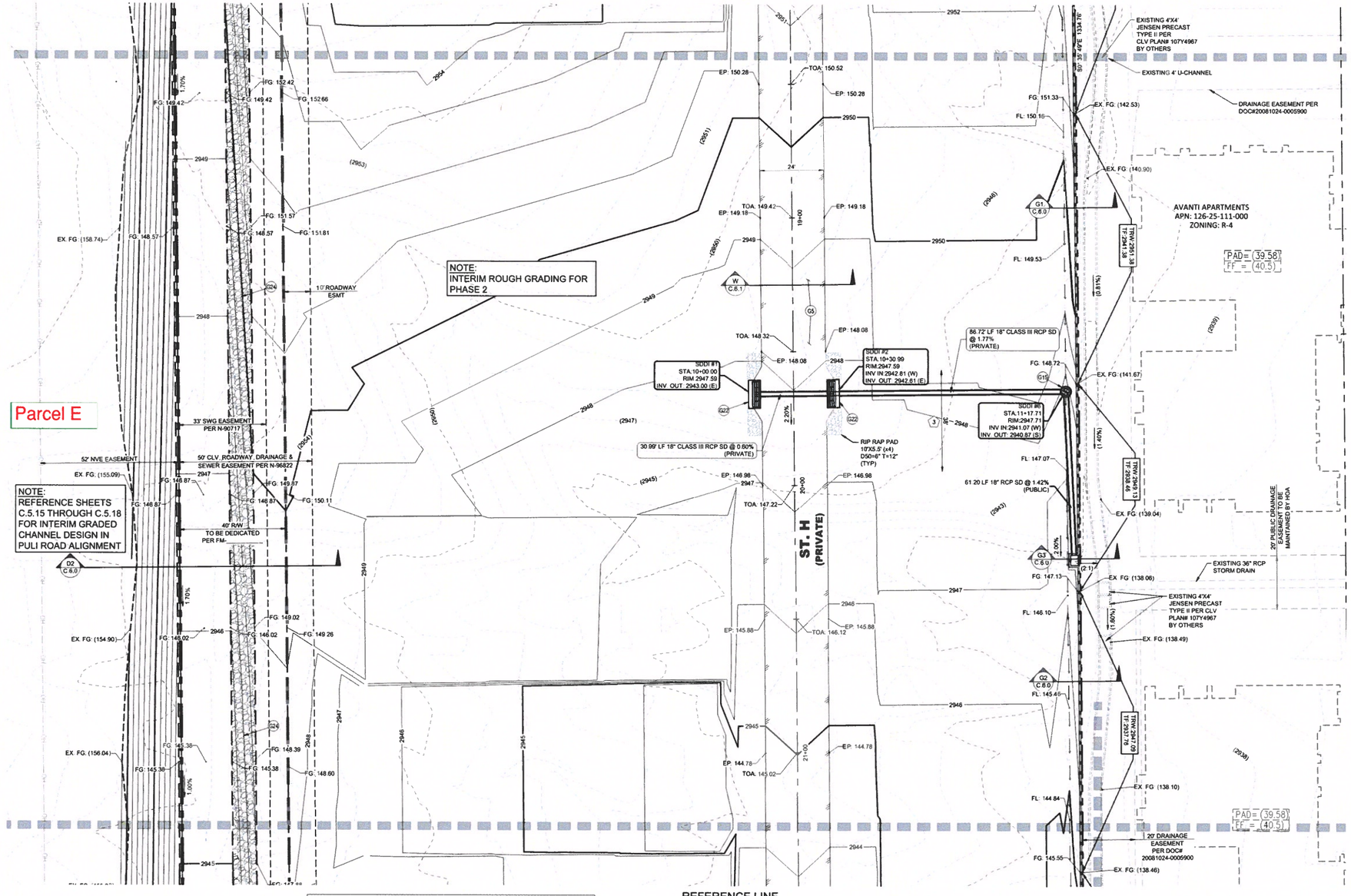
CENTENNIAL HEIGHTS TOWNHOMES PHASE 1

CITY OF LAS VEGAS, NEVADA

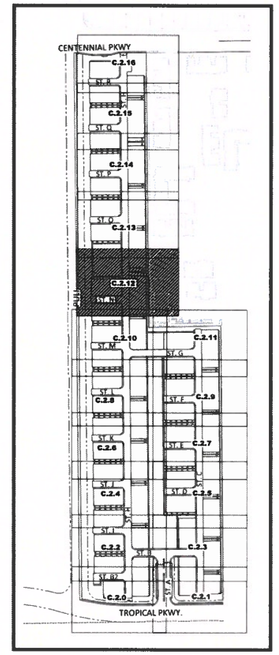
GRADING PLAN 11

C.2.10

PAGE 15



KEY MAP
N.T.S.



GRADING KEY NOTES:

(C1) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2 S1
(G2) CONSTRUCT "L" TYPE CURB PER CCAUSD #216
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(G7) CONSTRUCT 5" CONCRETE SIDEWALK PER CCAUSD #234
(G8) CONSTRUCT 4" AC PAVEMENT OVER 4" TYPE II AGG BASE
(G9) CONSTRUCT 5.5" AC PAVEMENT OVER 6" TYPE II AGG BASE
(G10) CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228
(G11) SAWCUT, TRENCH, BACKFILL, AND ASPHALT PATCH PER CCAUSD 500.3, 500.4, 500.5 & 503 (PATCH DIMENSIONS TO BE DETERMINED IN THE FIELD) PROPOSED SAWCUT TO BE AT LANE LINE
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(G15) INSTALL NEENAH 2501-G GRATED LID PER DETAIL "9" ON C.6.1
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FOOD HITTING OVERHEAD POWER LINES, IT'S CODE 511
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0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

PROFESSIONAL ENGINEER STATE OF NEVADA
LARRY W. BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
GRADING PLAN 13

C.2.12

H:\2019\NV-1949-1909 Centennial Heights Townhomes\Project Data\02 CAD\2.03 Sheet Files\Phase 1\NV-1949-1909_C.2.0_PH1_GRD2.dwg - C.2.12 - 4/30/2020 12:01pm, shayans

REFERENCE LINE
SEE SHEET C.2.14

Parcel E

NOTE:
REFERENCE SHEETS C.5.15 THROUGH C.5.18 FOR INTERIM GRADED CHANNEL DESIGN IN PULI ROAD ALIGNMENT

NOTE:
INTERIM ROUGH GRADING FOR PHASE 2

ST. H (PRIVATE)

EX POWER POLE TO BE PROTECTED IN PLACE

EX. FG. (163.95)
EX. FG. (164.01)
EX. FG. (164.51)
EX. FG. (158.78)
EX. FG. (149.64)
EX. FG. (145.03)
EX. FG. (146.58)
EX. FG. (144.70)
EX. FG. (147.12)
EX. FG. (142.53)

PAD= (41.08)
FF = (42.0)

PAD= (39.58)
FF = (40.5)

20' DRAINAGE EASEMENT PER DOC#20081024-0005900

EXISTING 4'X4' JENSEN PRECAST TYPE II PER CLV PLAN# 107Y4967 BY OTHERS

EXISTING 4' U-CHANNEL

DRAINAGE EASEMENT PER DOC#20081024-0005900

40' R/W TO BE DEDICATED PER FM

10' ROADWAY ESMT

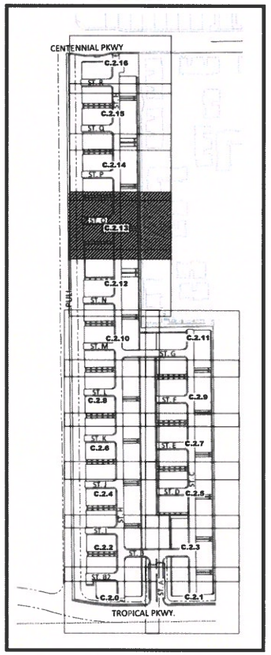
33' SWG EASEMENT PER N-90717

52' NVE EASEMENT

50' CLV, ROADWAY, DRAINAGE & SEWER EASEMENT PER N-96822

REFERENCE LINE
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KEY MAP
N.T.S.



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AREA OF DISTURBANCE

ONSITE: 26.76 AC.
OFFSITE: 7.20 AC.

DRAINAGE CERTIFICATION:

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DS# 5232

LARRY BITTON, P.E. NO. 010159 DATE

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 968-4063
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WARNING
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0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

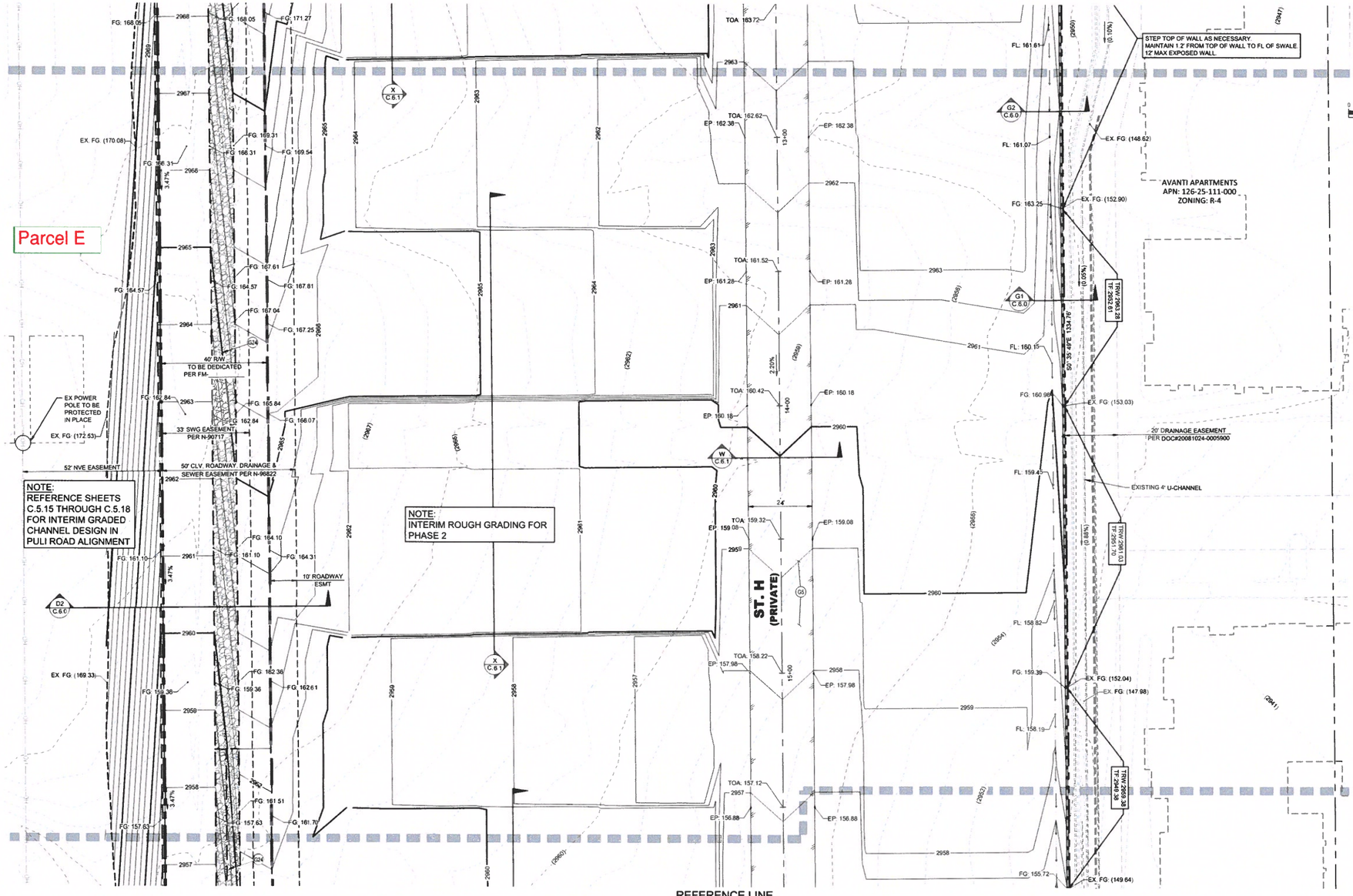
PROFESSIONAL ENGINEER STATE OF NEVADA
LARRY W BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
GRADING PLAN 14

C.2.13

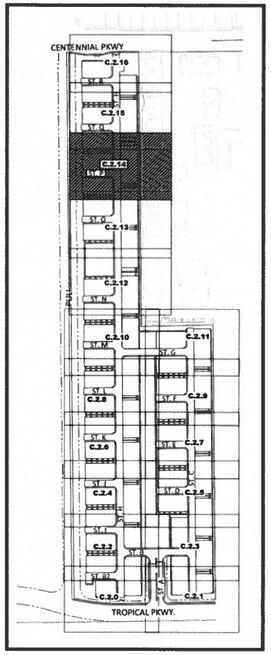
PAGE 18

REFERENCE LINE
SEE SHEET C.2.15



REFERENCE LINE
SEE SHEET C.2.13

KEY MAP
N.T.S.



GRADING KEY NOTES:

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(G2) CONSTRUCT "L" TYPE CURB PER CCAUSD #216
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(G15) INSTALL NEENAH 2501-G GRATED LID PER DETAIL "9" ON C.6.1
(G16) INSTALL STORM DRAIN JUNCTION STRUCTURE PER STRUCTURAL DRAWINGS.
(G17) EXISTING TO REMAIN. PROTECT IN PLACE
(G18) INSTALL LANDSCAPING PER LANDSCAPE PLAN BY OTHERS
(G19) CONSTRUCT 5'X5' CONCRETE SIDEWALK PAD PER CCAUSD #234 FOR ADA TURNAROUND
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(G21) CONSTRUCT DROP INLET TYPE "CM2" PER CCAUSD #412.1 & 421. L=15', D=8.20'
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(G23) CONSTRUCT SIDEWALK UNDER DRAIN PER CCAUSD #236
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THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.

Call before you Dig
AVOID OUTHOU UNDERGROUND UTILITY LINES. IT'S COST-LY
Call 811 or 1-800-227-2600

AVOID ATTRIC OVERHEAD POWER LINES. IT'S COST-LY
CALL BEFORE YOU DIG OVERHEAD
1-702-227-2929

FAST
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BASIS OF BEARING

NORTH 00°37'29" WEST, BEING THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON THE PLAT OF CONSTELLATION ESTATES, RECORDED IN BOOK 102, PAGE 92, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
NAVD 88

FLOOD ZONE:

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SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

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   PREPARED BY: GEOTEK, INC.
   PROJECT NO.: 15256-LV
   DATE: JANUARY 9, 2020
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   TOTAL: 52,383 CY (FILL)
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REVISIONS		
REV #	DATE	

*SEE GENERAL NOTES SHEET

DRAWING INFO	
DATE	4/29/2020
DESIGNED	SS
DRAWN	PMP
CHECKED	AD
PROJECT	NV-1949-1909

PROFESSIONAL ENGINEER STATE OF NEVADA
LARRY W. BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

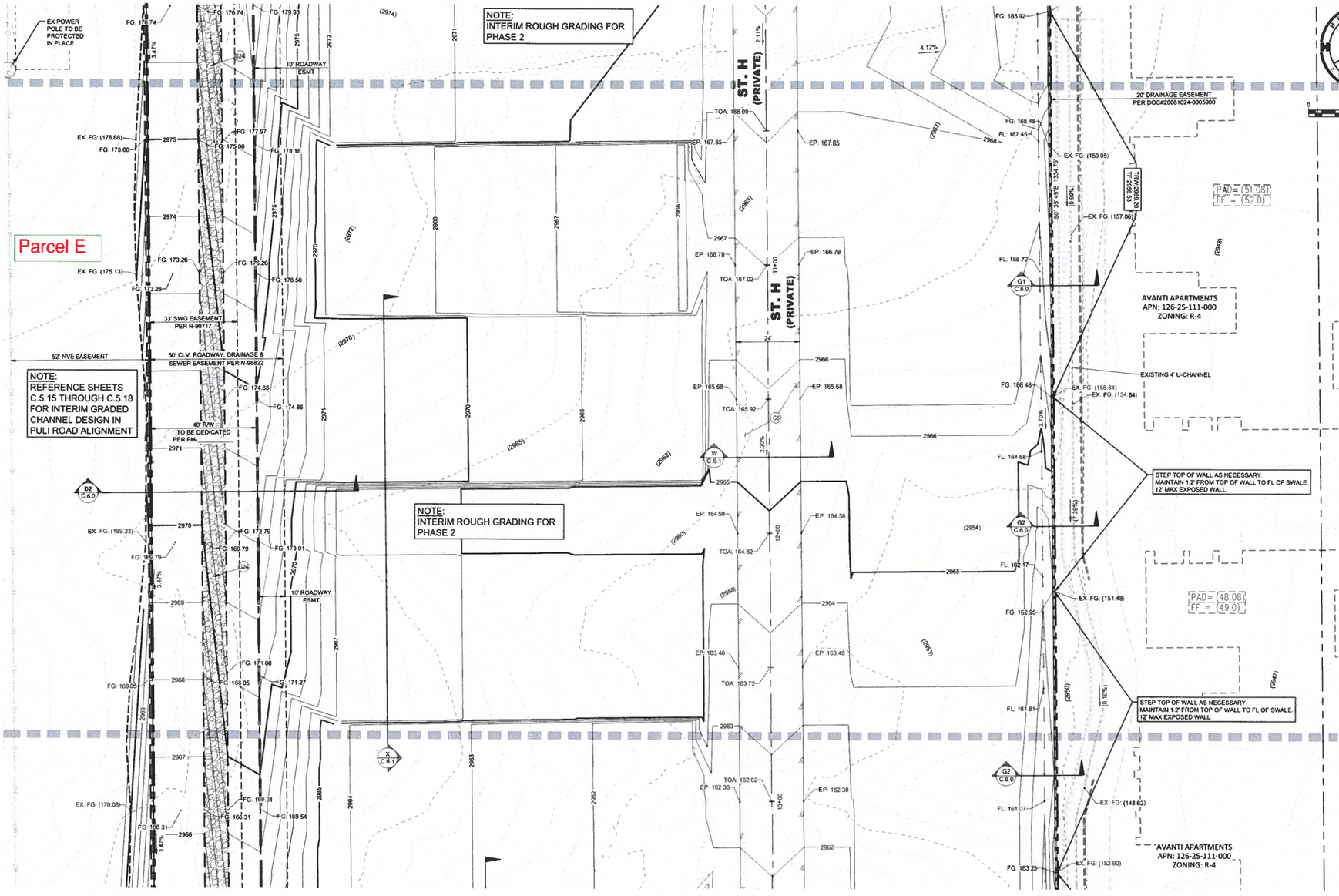
CENTENNIAL HEIGHTS TOWNHOMES PHASE 1

CITY OF LAS VEGAS, NEVADA

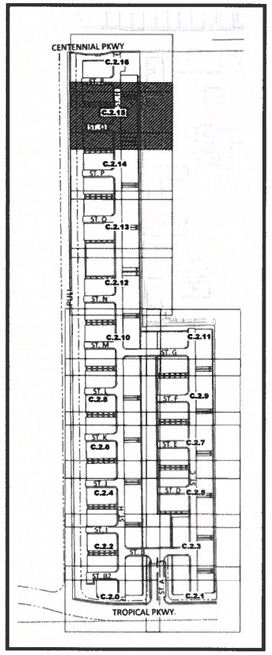
GRADING PLAN 15

C.2.14

PAGE 19



KEY MAP
N.T.S.



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CALL BEFORE YOU DO OVERHEAD 1-702-227-2929

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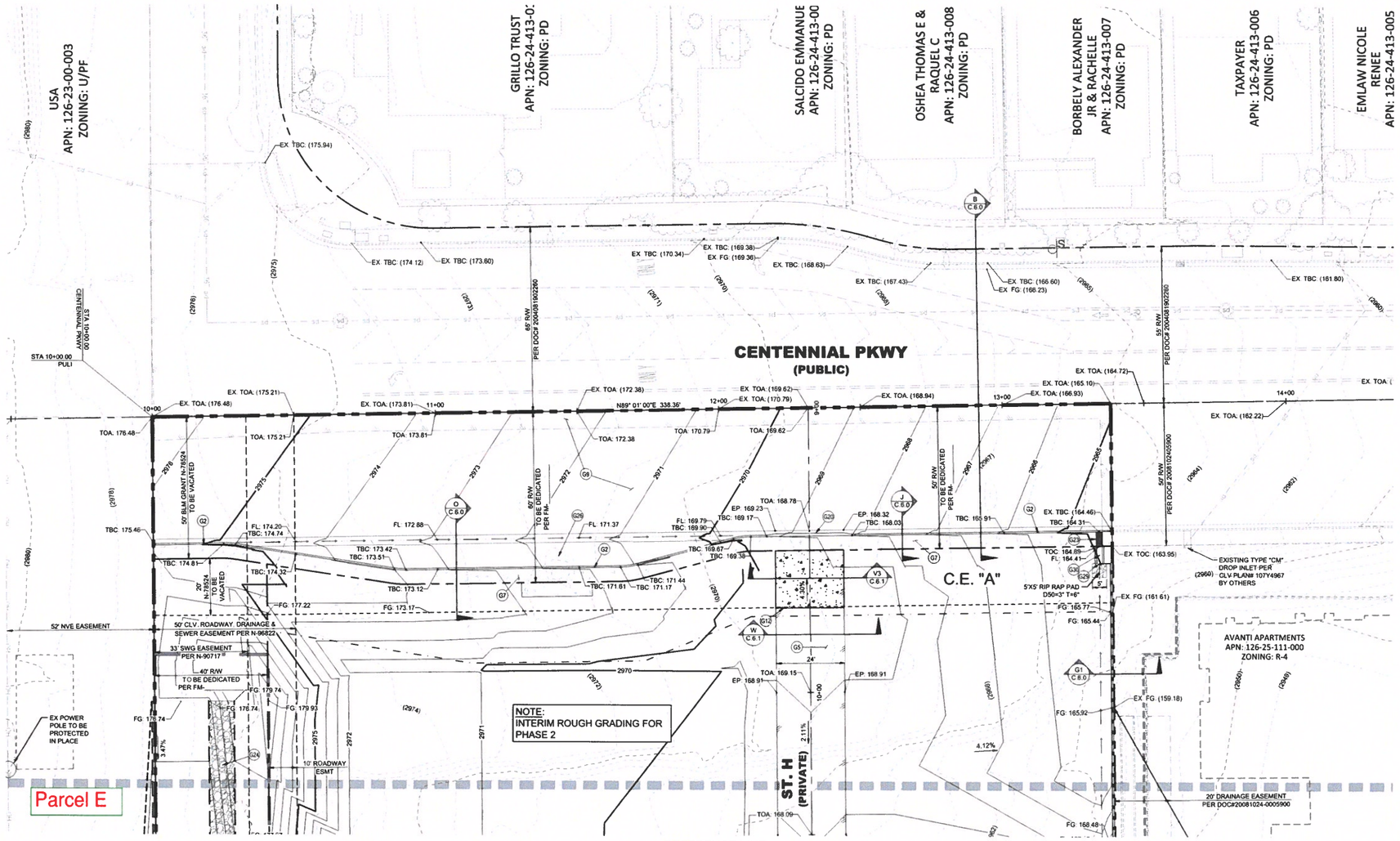
DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY W. BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

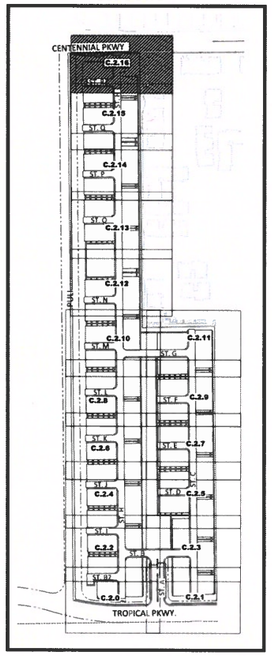
CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
GRADING PLAN 16

C.2.15

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KEY MAP
N.T.S.



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(G31) CONSTRUCT 24"X36" BUBBLER STRUCTURE PER DETAIL "4" ON SHEET C.6.1

LEGAL DESCRIPTION:

A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.D., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA. MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE WEST HALF (W 1/2) OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST. M.D.M., TOGETHER WITH:

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.

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 DIG OVERHEAD
1-702-227-2929

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

BASIS OF BEARING

NORTH 00°37'29" WEST, BEING THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.,CLARK COUNTY, NEVADA, AS SHOWN ON THE PLAT OF CONSTELLATION ESTATES, RECORDED IN BOOK 102, PAGE 92, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
NAVD 88

FLOOD ZONE:

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SIGHT VISIBILITY ZONE PER CCAUSD# 201.2 (TYP)

SIGHT VISIBILITY ZONE NOTE:

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

NOTE:
ALL COMMON ELEMENTS ARE PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA.

NOTE:
ALL PRIVATE STREETS ARE P.U.E., PUBLIC SEWER EASEMENTS AND PUBLIC DRAINAGE EASEMENTS TO BE PRIVATELY MAINTAINED BY THE HOA.

NOTE:
ADD 2900' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM. FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION.
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS.
4. THESE PLANS SHALL NOT IN PART, OR IN WHOLE, BE USED FOR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES.
5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS.
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. SOILS REPORT NOTE:
   GRADING SHALL BE IN ACCORDANCE WITH SOILS REPORT
   PREPARED BY: GEOTEK, INC.
   PROJECT NO: 15256-LV
   DATE: JANUARY 9, 2020
8. CUT/FILL ESTIMATES (PUBLIC AND PRIVATE):
   FROM EXISTING TO FINISH GRADE ELEVATIONS
   NET CUT 71,092 CY
   NET FILL 123,475 CY
   TOTAL 52,383 CY (FILL)
9. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.

EASEMENT KEY NOTES:

(1) 23' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED PER FINAL MAP.
(2) 24' PUBLIC EMERGENCY ACCESS EASEMENT TO BE PRIVATELY MAINTAINED PER FINAL MAP.
(3) PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED BY HOA PER FINAL MAP.

AREA OF DISTURBANCE

ONSITE: 26.76 AC.
OFFSITE: 7.20 AC.

DRAINAGE CERTIFICATION:

THIS SET OF IMPROVEMENT PLANS IS CERTIFIED TO CONFORM TO THE REQUIREMENTS OF THE APPROVED DRAINAGE STUDY.
DS# 5232

LARRY BITTON, P.E. NO. 010159 DATE

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 968-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

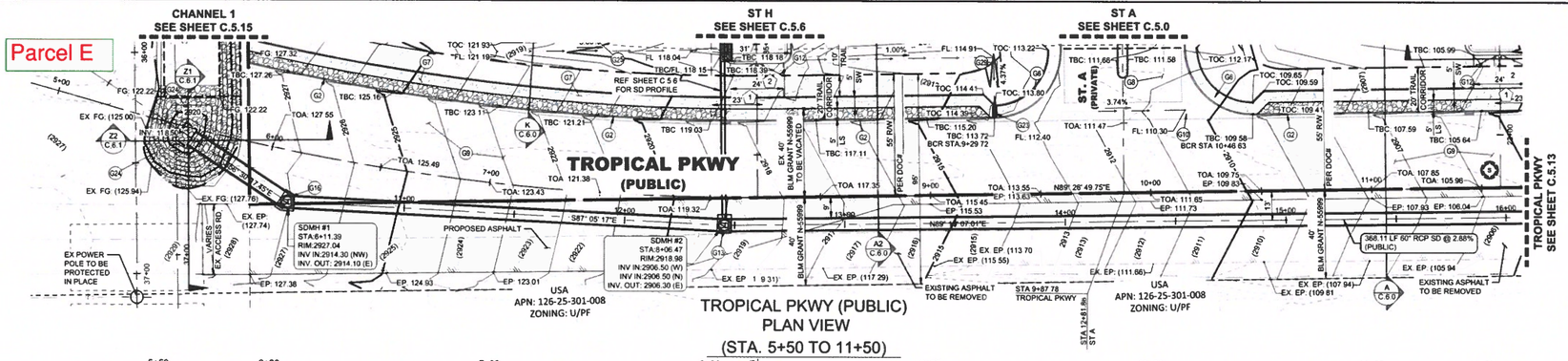
PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY W. BITTON
EXP. 12-31-20
CIVIL
No. 010159
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
CITY OF LAS VEGAS, NEVADA
GRADING PLAN 17

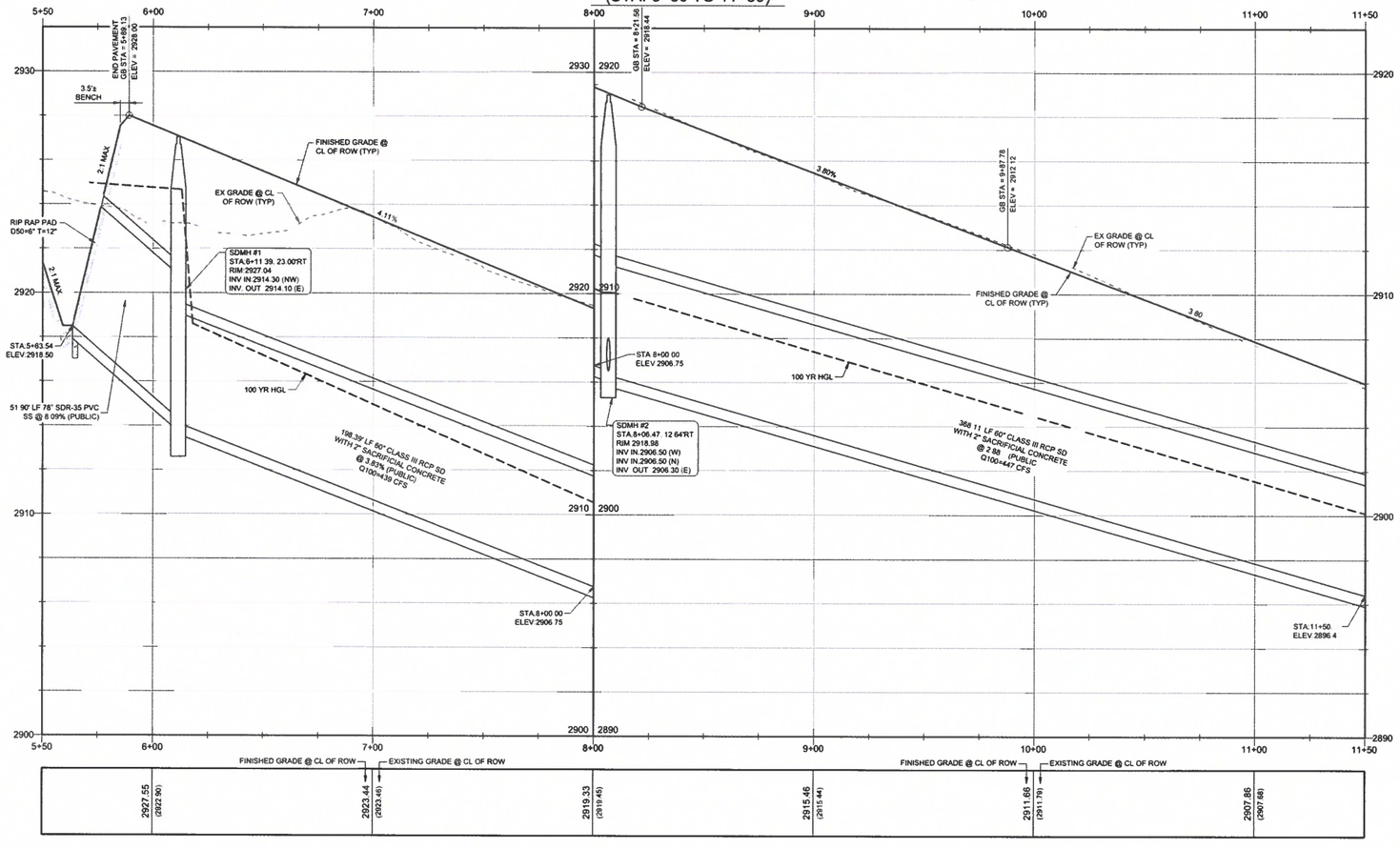
C.2.16

PAGE 21

Parcel E



TROPICAL PKWY (PUBLIC)
PLAN VIEW
(STA. 5+50 TO 11+50)



TROPICAL PKWY (PUBLIC)
PLAN VIEW
(STA. 5+50 TO 11+50)
SCALE: 1" = 30' H
SCALE: 1" = 3' V

GRADING KEY NOTES:

(G1) CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2 S1
(G2) CONSTRUCT "L" TYPE CURB PER CCAUSD #216
(G3) CONSTRUCT "A" TYPE CURB PER CCAUSD #219
(G4) CONSTRUCT 10' TRANSITION FROM "L" TYPE CURB TO ROLL CURB PER DETAIL "1" ON SHEET C.6.1
G5 CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE II AGG BASE
G6 CONSTRUCT SIDEWALK RAMP "CASE I" PER CCAUSD #235
G7 CONSTRUCT 5" CONCRETE SIDEWALK PER CCAUSD #234
G8 CONSTRUCT 4" AC PAVEMENT OVER 4" TYPE II AGG BASE
G9 CONSTRUCT 5.5" AC PAVEMENT OVER 6" TYPE II AGG BASE
1 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228
11 SAWCUT, TRENCH, BACKFILL, AND ASPHALT PATCH PER CCAUSD 500 3, 500 4, 500 5 & 503 (PATCH DIMENSIONS TO BE DETERMINED IN THE FIELD PROPOSED SAWCUT TO BE AT LANE LINE
INSTALL WROUGHT IRON GATE PER CCAUSD #425 S1
INSTALL 60" TYPE II-SD STORM DRAIN MANHOLE PER CCAUSD #401 & 405.2
CONSTRUCT CURB OPENING PER DETAIL "2" OF SHEET C.6.1
INSTALL NEENAH 2501-G GRATED LID PER DETAIL "9" ON C.6.1
INSTALL STORM DRAIN JUNCTION STRUCTURE PER STRUCTURAL DRAWINGS.
EXISTING TO REMAIN. PROTECT IN PLACE.
INSTALL LANDSCAPING PER LANDSCAPE PLAN BY OTHERS
CONSTRUCT 5'X5' CONCRETE SIDEWALK PAD PER CCAUSD #234 FOR ADA TURNAROUND
CONSTRUCT DRIVEWAY PER CCAUSD #223 & 223.1
CONSTRUCT DROP INLET TYPE "CM2" PER CCAUSD #412.1 & 421. L=15', D=8.20'
CONSTRUCT DROP INLET TYPE "CM2" PER CCAUSD #412.1 & 421. L=10', D=7.95'
CONSTRUCT SIDEWALK UNDER DRAIN PER CCAUSD #236
INSTALL RIP-RAP D50=6",T=12" SUBGRADE @ 90% COMPACTION LENGTH AND WIDTH SPECIFIED ON PLAN
CONSTRUCT 4" CONCRETE SIDEWALK PER CCAUSD #234
CONSTRUCT BUS TURNOUT PER CCAUSD #234.1 & DETAIL "O" ON C.6.0
CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228
INSTALL 4" SIDEWALK DRAIN PIPE PER DETAIL "7" ON SHEET C.6.1
ONSTRUCT BLOCK WALL OPENING PER DETAIL "3" ON SHEET C.6.1
STRUCT 24" WIDE CONCRETE FLUME PER DETAIL "5" ON SHEET C.6.1
NSTRUCT 24"X36" BUBBLER STRUCTURE PER DETAIL "4" ON SHEET 6.1

LEGAL DESCRIPTION:

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DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

NOTE:
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BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
NAVD 88

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EASEMENT KEY NOTES:

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(3) [illegible] MAINTAINED BY [illegible] PER FINAL MAP

ENGINEER'S NOTES:

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APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO 135217 FIRST APPROVAL DATE:
LVVWD APPROVED FIRE FLOW 1750 GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW N/A GPM

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FREQUENCY AND INTERNAL SYSTEM OF TRANSMISSION

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REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

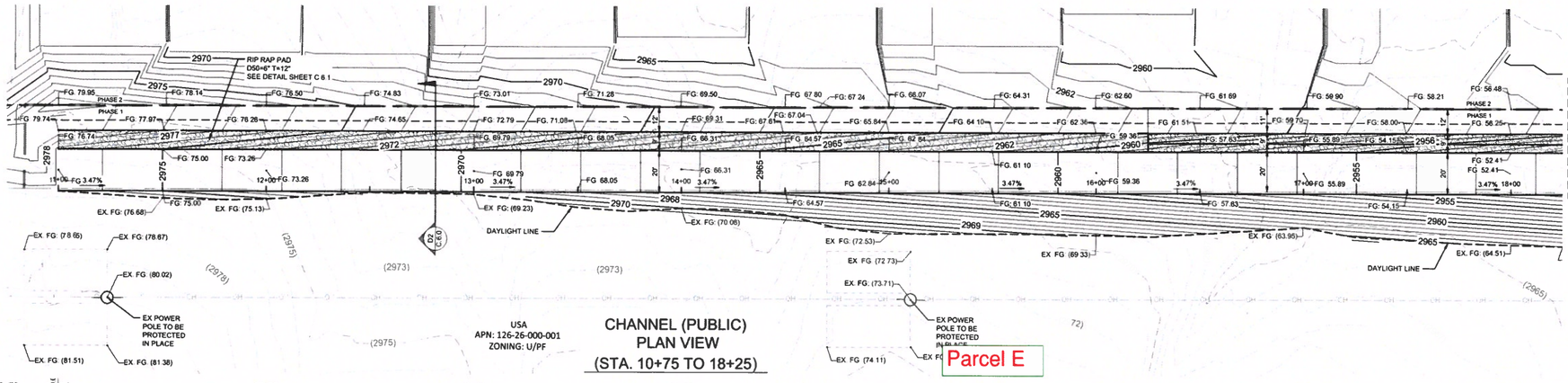
PROFESSIONAL ENGINEER STATE OF NEVADA
LARRY M BITTON
EXP 12-31-20
CIVIL
No. 0069
4/29/2020

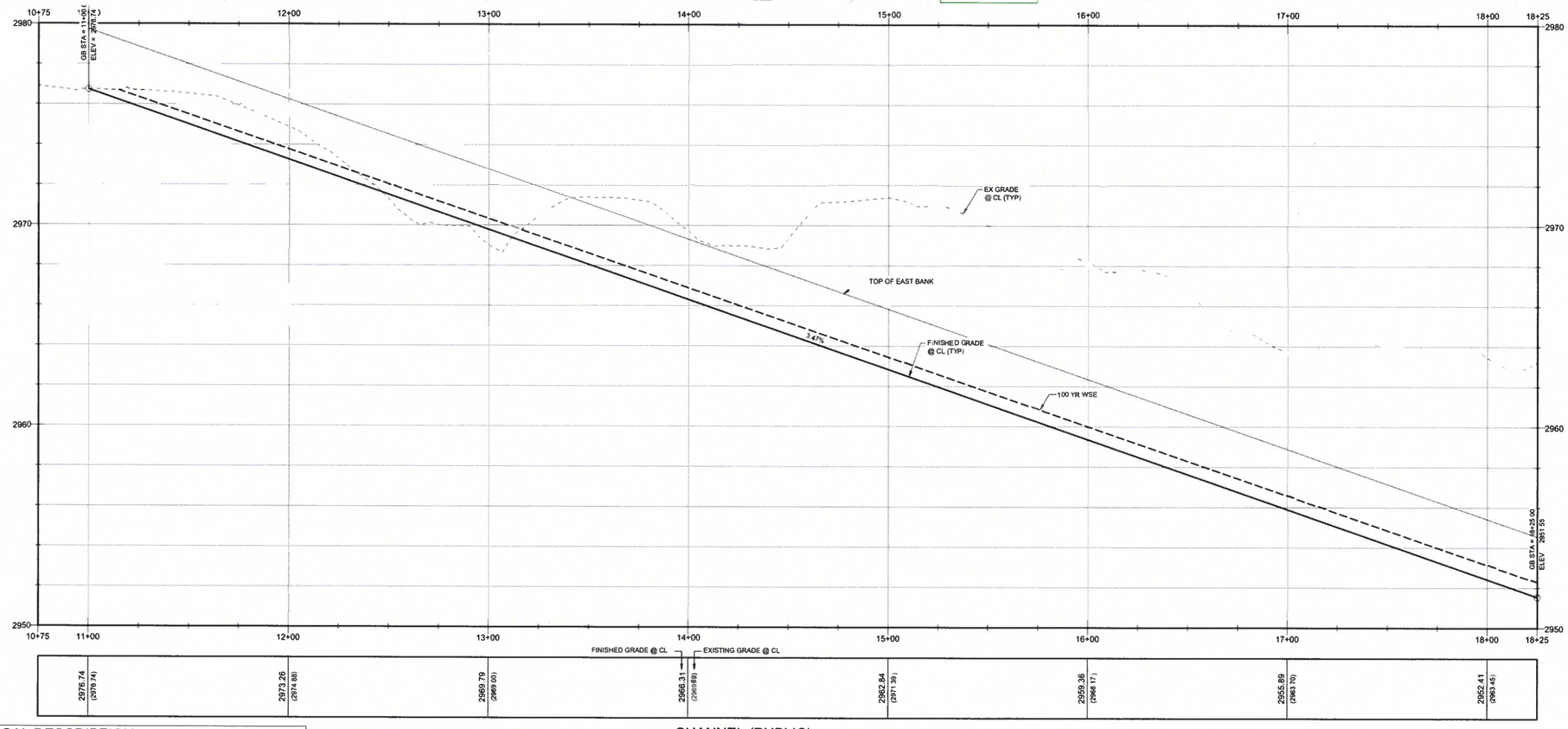
CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA

TROPICAL PKWY PLAN & PROFILE (STA 5+50 TO STA 11+50)

C.5.12

H:\2019\NV-1949-1909 Centennial Heights Townhomes\Project Data\02 CAD\2 03 Sheet Files\Phase 1\NV-1949-1909_C 5.0_PH1_PNP_EW2.dwg - C.5.12 - 4/30/2020 12:16pm, shayans





CHANNEL (PUBLIC)
PROFILE VIEW
(STA. 10+75 TO 18+25)
SCALE: 1" = 30' H
SCALE: 1" = 3' V

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- G11 SAWCUT TRENCH BACKFILL, AND ASPHALT PATCH PER CCAUSD 500.3, 500.4, 500 5 & 503 (PATCH DIMENSIONS TO BE DETERMINED IN THE FIELD) PROPOSED SAWCUT TO BE AT LANE LINE
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- G14 CONSTRUCT CURB OPENING PER DETAIL "2" OF SHEET C 6.1
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- G16 INSTALL STORM DRAIN JUNCTION STRUCTURE PER STRUCTURAL DRAWINGS
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- G29 CONSTRUCT BLOCK WALL OPENING PER DETAIL "3" ON SHEET C 6.1
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FAST Call before you UnderGround
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BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
NAVD 88

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3. ~~DRAINAGE EASEMENT PER FINAL MAP~~

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APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 135217 FIRST APPROVAL DATE
LV/VWD APPROVED FIRE FLOW 1750 GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW N/A GPM

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*SEE GENERAL NOTES SHEET

DRAWING INFO
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DESIGNED SS
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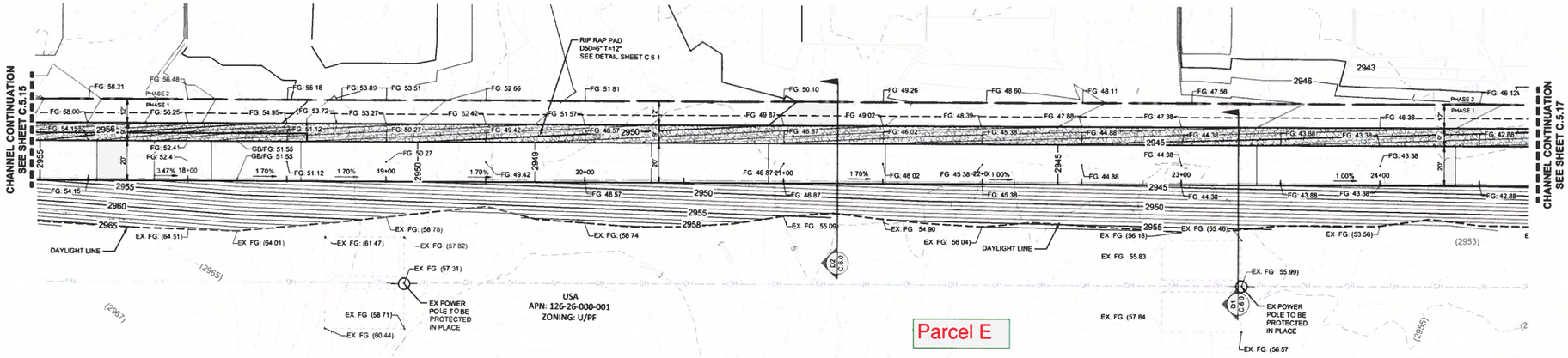
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CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA

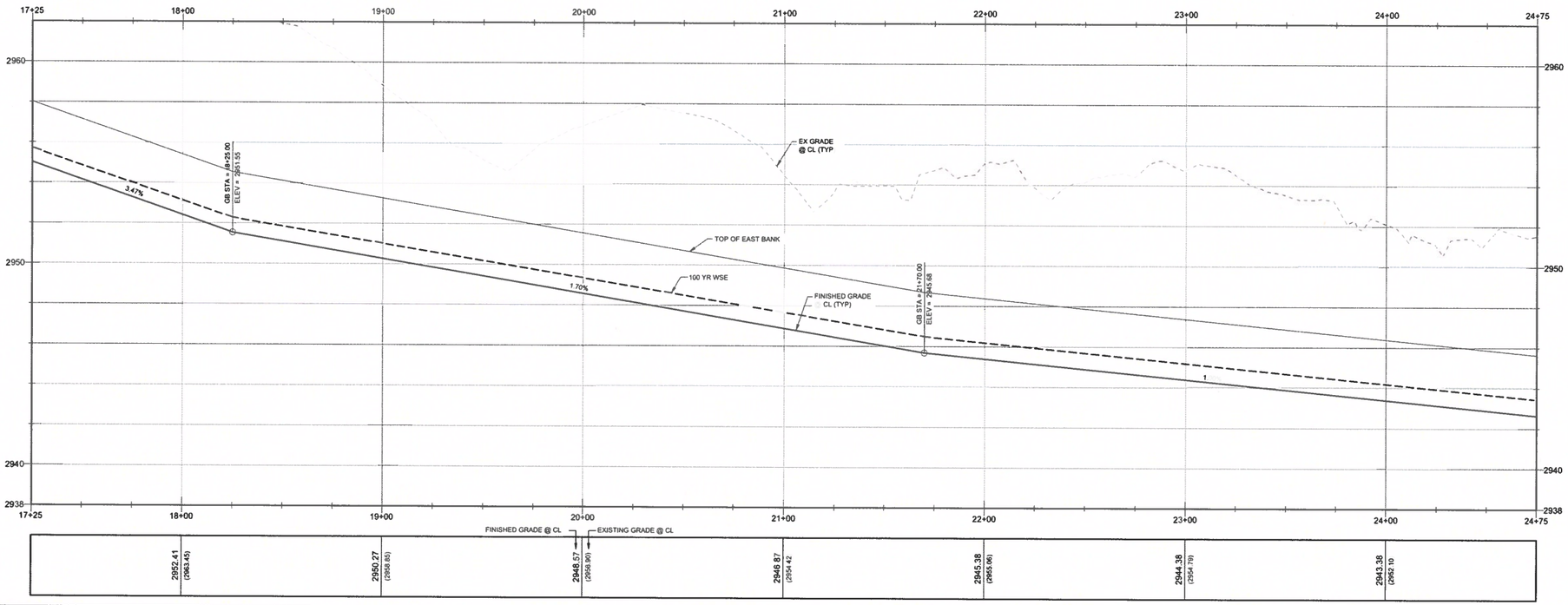
CHANNEL PLAN & PROFILE (STA 11+00 TO STA 18+50)

C.5.15

H:\2019\NV-1949-1909 Centennial Heights Townhomes\Project Data\02 CAD\2 03 Sheet Files\Phase 1\NV-1949-1909_C 5.0_PH1_FNP_SD.dwg - C 5.15 - 4/30/2020 12:18pm, shayans



CHANNEL (PUBLIC)
PLAN VIEW
STA. 17+25 TO 24+75



CHANNEL (PUBLIC)
PROFILE VIEW
STA. 17+25 TO 24+75

LEGAL DESCRIPTION:

A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.D., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA, MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE WEST HALF (W 1/2) OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., TOGETHER WITH:

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.

BASIS OF BEARING

NORTH 00°37'29" WEST, BEING THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON THE PLAT OF CONSTELLATION ESTATES, RECORDED IN BOOK 102, PAGE 92, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

FLOOD ZONE:

THIS SITE IS LOCATED IN A ZONE 'X', AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN AND PARTIALLY IN A SHADED ZONE 'X', AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE OF FLOOD PER THE FLOOD INSURANCE RATE MAP COMMUNITY PANEL 32003C1750E, CLARK COUNTY, NEVADA DATED NOVEMBER 16, 2011, REVISED TO REFLECT LOMR DATED OCTOBER 18, 2018.

Call before you dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
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1-702-227-2929

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

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR 24 INCH COVER PER UDACS SECTION 2 08 04
GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION

NOTE:
ADD 2900 TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM
FINISHED GRADE CONTOURS ARE APPROXIMATE
EFER TO SPOT ELEVAT ON GRADE TAGS FOR CONSTR IO K NG U P SES

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2,956.44
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EASEMENT KEY NOTES:

1 23' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED PER FINAL MAP
2 24' PUBLIC EMERGENCY ACCESS EASEMENT TO BE PRIVATELY MAINTAINED PER FINAL MAP

ENGINEER'S NOTES:

1 CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL AND STORMWATER MANAGEMENT DURING CONSTRUCTION
2 SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3 ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS
4 THESE PLANS SHALL NOT IN PART OR IN WHOLE BE USED OR CONSTRUCTION UNTIL APPROVED AND SIGNED BY GOVERNING AGENCIES
5 ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS
6 DURING CONSTRUCTION SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE SAME MUST UT LIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES
7 FLOOR SECTION ASSUMES 5" SLAB OVER MIN 8 5" TYPE I CONTRACT R T VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 135217 FIRST APPROVAL DATE:
LVVWD APPROVED FIRE FLOW 1750 GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW N/A GPM

GRADING KEY NOTES:

G1 CONSTRUCT 30" ROLL CURB PER CCAUSD #217.2 S1
G2 CONSTRUCT "L" TYPE CURB PER CCAUSD #216
G3 CONSTRUCT "A" TYPE CURB PER CCAUSD #219
G4 CONSTRUCT 10' TRANSITION FROM "L" TYPE CURB TO ROLL CURB PER DETAIL "1" ON SHEET C 6 1
G5 CONSTRUCT 2" AC PAVEMENT OVER 4" TYPE II AGG BASE
G6 CONSTRUCT SIDEWALK RAMP "CASE I" PER CCAUSD #235
G7 CONSTRUCT 5" CONCRETE SIDEWALK PER CCAUSD #234
G8 CONSTRUCT 4" AC PAVEMENT OVER 4" TYPE II AGG BASE
G9 CONSTRUCT 5.5" AC PAVEMENT OVER 6" TYPE II AGG BASE
1 CONSTRUCT 8' CONCRETE VALLEY GUTTER PER CCAUSD #228
11 SAWCUT, TRENCH BACKFILL AND ASPHALT PATCH PER CCAUSD 500.3 500.4, 500.5 & 503 (PATCH DIMENSIONS TO BE DETERMINED IN THE FIELD PROPOSED SAWCUT TO BE AT LANE LINE
1 INSTALL WROUGHT IRON GATE PER CCAUSD #425.S1
1 INSTALL 60" TYPE II-SD STORM DRAIN MANHOLE PER CCAUSD #401 & 405 2
1 CONSTRUCT CURB OPENING PER DETAIL "2" OF SHEET C 6 1
1 INSTALL NEENAH 2501-G GRATED LID PER DETAIL "9" ON C 6 1
1 INSTALL STORM DRAIN JUNCTION STRUCTURE PER STRUCTURAL DRAWINGS
1 EXISTING TO REMAIN. PROTECT IN PLACE
1 INSTALL LANDSCAPING PER LANDSCAPE PLAN BY OTHERS
1 CONSTRUCT 5'X5' CONCRETE SIDEWALK PAD PER CCAUSD #234 FOR ADA TURNAROUND
CONSTRUCT DRIVEWAY PER CCAUSD #223 & 223.1
CONSTRUCT DROP INLET TYPE "CM2" PER CCAUSD #412.1 & 421. L=15', D=8.20'
CONSTRUCT DROP INLET TYPE "CM2" PER CCAUSD #412.1 & 421. L=10', D=7.95'
2 CONSTRUCT SIDEWALK UNDER DRAIN PER CCAUSD #236
2 INSTALL RIP-RAP D50=6",T=12" SUBGRADE @ 90% COMPACTION LENGTH AND WIDTH SPECIFIED ON PLAN
CONSTRUCT 4" CONCRETE SIDEWALK PER CCAUSD #234
CONSTRUCT BUS TURNOUT PER CCAUSD #234.1 & DETAIL "O" ON C 6
CONSTRUCT 3' CONCRETE VALLEY GUTTER PER CCAUSD #228
INSTALL 4" SIDEWALK DRAIN PIPE PER DETAIL "7" ON SHEET C 6.1
CONSTRUCT BLOCK WALL OPENING PER DETAIL "3" ON SHEET C 6 1
CONSTRUCT 24" WIDE CONCRETE FLUME PER DETAIL "5" ON SHEET
1 CONSTRUCT 24"X36" BUBBLER STRUCTURE PER DETAIL "4" ON SHE C 6 1

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

SCALE 1" = 30'

WARNING
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REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

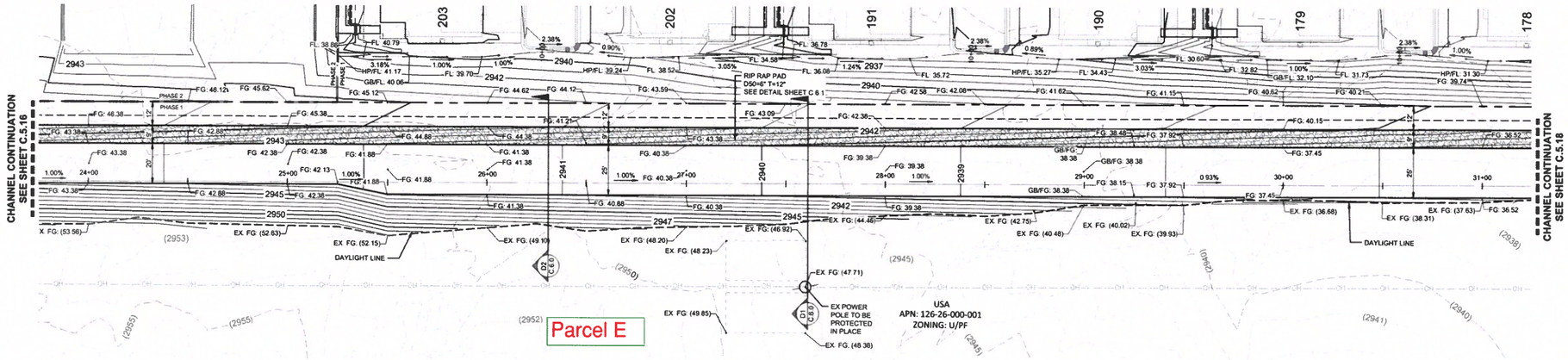
PROFESSIONAL ENGINEER STATE OF NEVADA
LARRY M BITTON
EXP. 12-31-20
CIVIL
No. 01088
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA

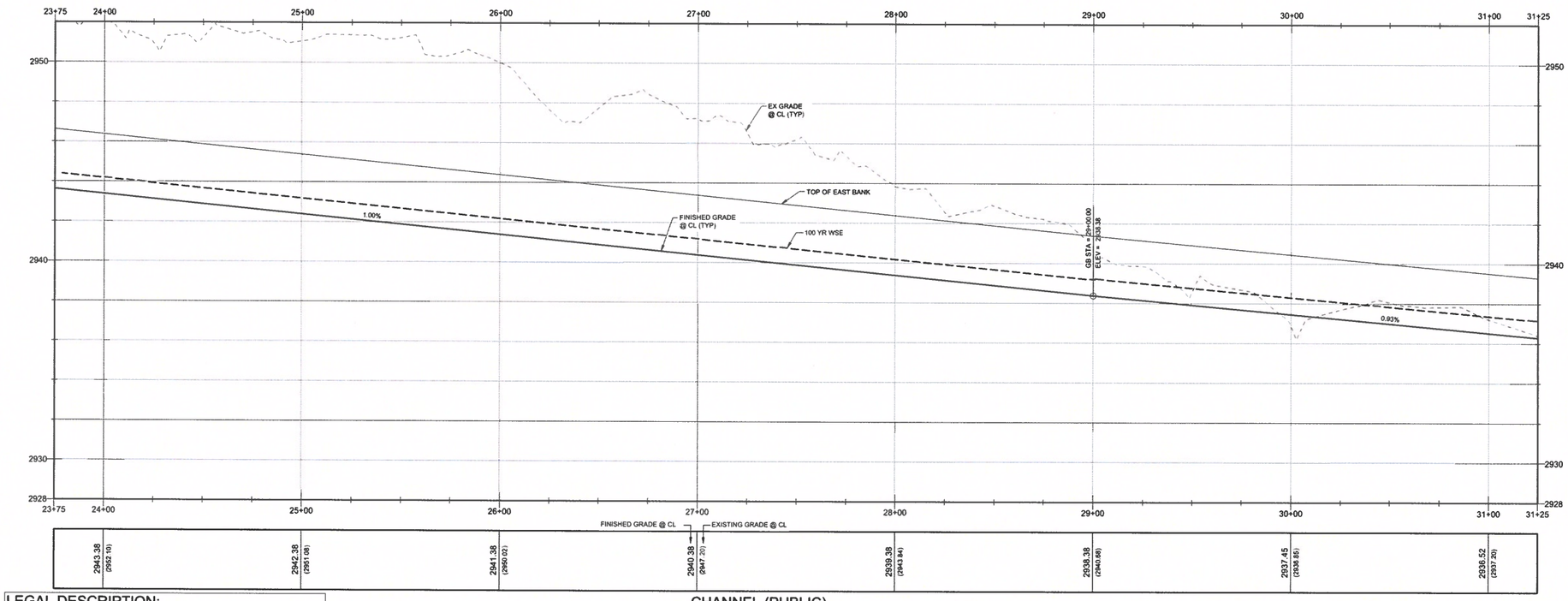
CHANNEL PLAN & PROFILE (STA 17+50 TO STA 25+00)

C.5.16

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CHANNEL (PUBLIC)
PLAN VIEW
(STA. 23+75 TO 31+25)



CHANNEL (PUBLIC)
PROFILE VIEW
(STA. 23+75 TO 31+25)
SCALE: 1" = 30' H
SCALE: 1" = 3' V

GRADING KEY NOTES:

- G1 CONSTRUCT 30" ROLL CURB PER CCAUSD #217 2.S1
- G2 CONSTRUCT "L" TYPE CURB PER CCAUSD #216
- G3 CONSTRUCT "A" TYPE CURB PER CCAUSD #219
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DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

NOTE:
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FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2.956.44
NAVD 88

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7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 135217 FIRST APPROVAL DATE:
LVVWD APPROVED FIRE FLOW 1750 GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW N/A GPM

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SCALE: 1" = 30'

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REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

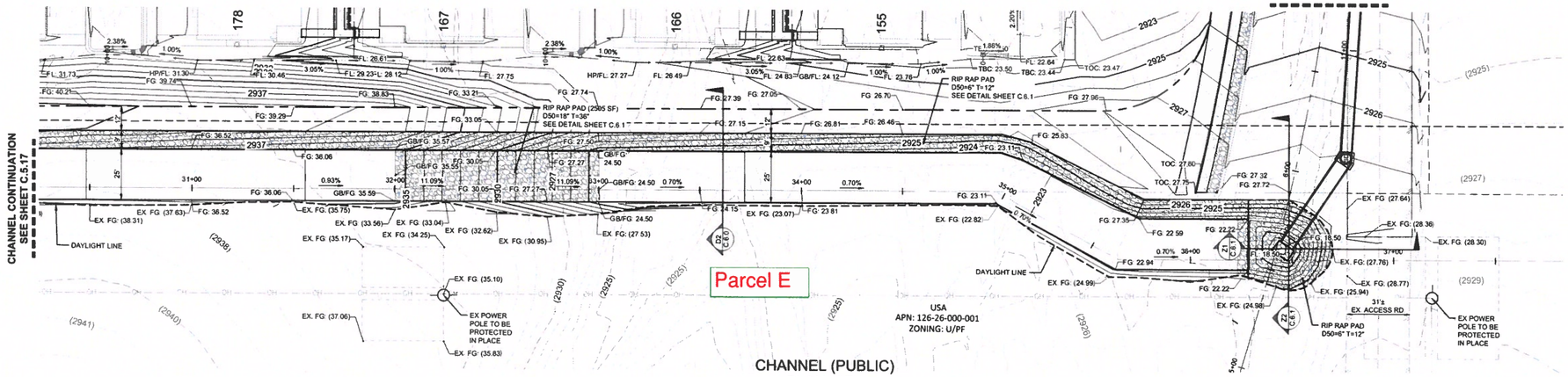
PROFESSIONAL ENGINEER-STATE OF NEVADA
LARRY M. BIFFTON
EXP. 12-31-20
CIVIL
No. 0018
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA

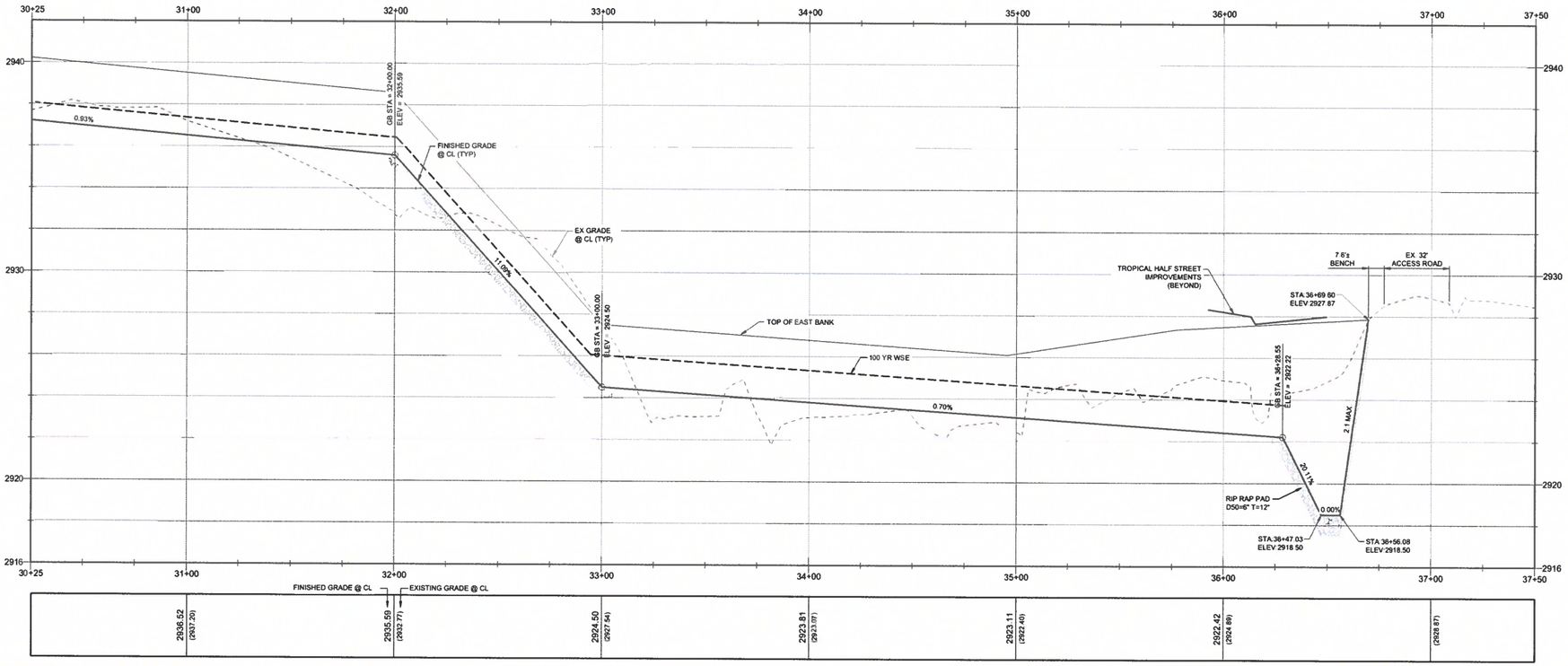
CHANNEL PLAN & PROFILE (STA 24+50 TO 32.00)

C.5.17

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CHANNEL (PUBLIC)
PLAN VIEW
(STA. 30+25 TO 37+50)



CHANNEL (PUBLIC)
PROFILE VIEW
(STA. 30+25 TO 37+50)
SCALE: 1" = 30' H
SCALE: 1" = 3' V

GRADING KEY NOTES:

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RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
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NAVD 88

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EASEMENT KEY NOTES:

1. 23' PUBLIC DRAINAGE EASEMENT TO BE PRIVATELY MAINTAINED PER FINAL MAP
2. 24' PUBLIC EMERGENCY ACCESS EASEMENT TO BE PRIVATELY MAINTAINED PER FINAL MAP

ENGINEER'S NOTES:

1. CONTRACTOR IS RESPONSIBLE FOR EROSION AND DUST CONTROL, AND STORMWATER MANAGEMENT DURING CONSTRUCTION
2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
3. ENGINEER TO BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES BETWEEN THESE PLANS AND FIELD CONDITIONS
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5. ALL GRADING SHALL CONFORM TO SOILS REPORT RECOMMENDATIONS
6. DURING CONSTRUCTION, SURVEYORS AND CONTRACTORS MUST VERIFY THAT ALL STREETS AND LOTS HAVE POSITIVE DRAINAGE. SAME MUST UTILIZE AT LEAST THREE GRADES ON VERTICAL TANGENTS TO VERIFY SLOPES.
7. FLOOR SECTION ASSUMES 5" SLAB OVER MIN. 8.5" TYPE II. CONTRACTOR TO VERIFY WITH STRUCTURAL PLANS AND GEOTECHNICAL ENGINEER.

APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO. 135217 FIRST APPROVAL DATE:
LVVWD APPROVED FIRE FLOW 1750 GPM AT 20 PSI RESIDENTIAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW N/A GPM

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
www.horrocks.com

WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

PROFESSIONAL ENGINEER STATE OF NEVADA LARRY W BITTON EXP. 12-31-20 CIVIL No. 01059
4/29/2020

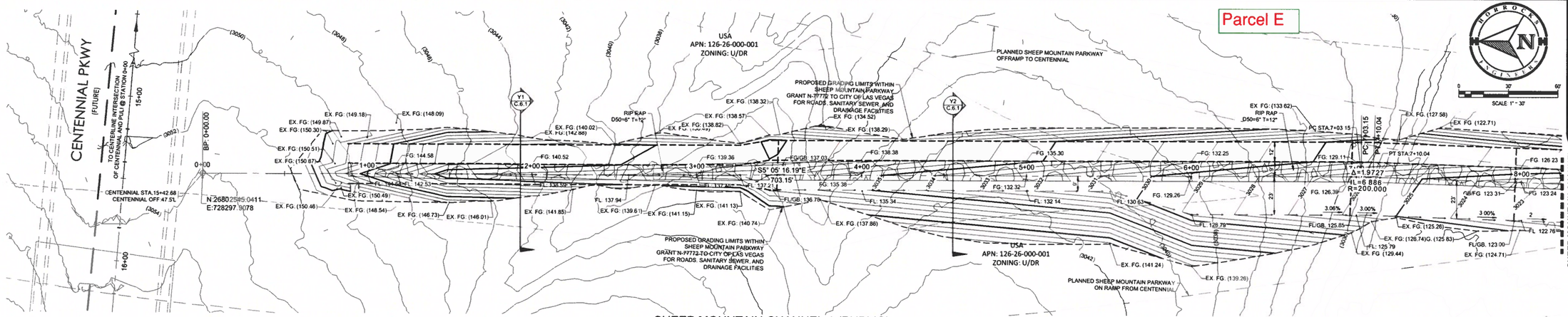
CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA

CHANNEL PLAN & PROFILE (STA 31+00 TO STA 38+00)

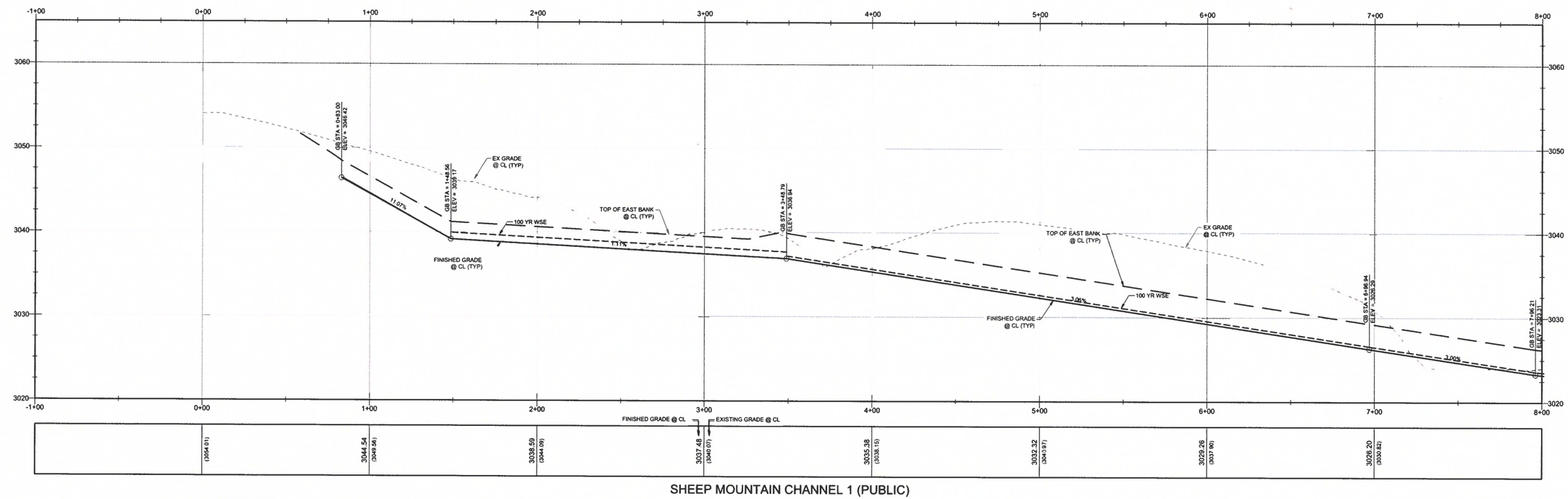
C.5.18

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Parcel E



SHEEP MOUNTAIN CHANNEL 1 (PUBLIC)
PLAN VIEW
(STA. 0+00 TO 8+00)



SHEEP MOUNTAIN CHANNEL 1 (PUBLIC)
PROFILE VIEW
(STA. 0+00 TO 8+00)
SCALE. 1" = 30' H
SCALE. 1" = 3' V

LEGAL DESCRIPTION:

A PORTION OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.D., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA. MORE PARTICULARLY DESCRIBED AS FOLLOWS:

THE WEST HALF (W 1/2) OF THE WEST HALF (W 1/2) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., TOGETHER WITH:

THE WEST HALF (W 1/2) OF THE SOUTHWEST QUARTER (SW 1/4) OF THE NORTHWEST QUARTER (NW 1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M.

Call before you UNDERGROUND UTILITY LINES. IT'S COST FREE! Call 811 OR 1-800-227-2600

CALL BEFORE YOU DIG OVERHEAD POWER LINES. IT'S COST FREE! 1-702-227-2929

EAST Call before you UnderGround 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEMS OF TRANSPORTATION

BASIS OF BEARING

NORTH 00°37'29" WEST, BEING THE WEST LINE OF THE NORTHWEST QUARTER (NW1/4) OF SECTION 25, TOWNSHIP 19 SOUTH, RANGE 59 EAST, M.D.M., CLARK COUNTY, NEVADA, AS SHOWN ON THE PLAT OF CONSTELLATION ESTATES, RECORDED IN BOOK 102, PAGE 92, OFFICIAL RECORDS, CLARK COUNTY, NEVADA.

FLOOD ZONE:

THIS SITE IS LOCATED IN A ZONE 'X', AREAS OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN AND PARTIALLY IN A SHADED ZONE 'X', AREAS OF 0.2% ANNUAL CHANCE FLOOD; AREAS OF 1% ANNUAL CHANCE FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 1% ANNUAL CHANCE OF FLOOD PER THE FLOOD INSURANCE RATE MAP COMMUNITY PANEL 32003C1750E, CLARK COUNTY, NEVADA DATED NOVEMBER 16, 2011, REVISED TO REFLECT LOMR DATED OCTOBER 18, 2018.

NOTE:

NOTARIZED PERMISSION TO GRADE REQUIRED.

DEPTH OF COVER DURING CONSTRUCTION:

MAINTAIN MINIMUM TWENTY-FOUR (24) INCH COVER PER UDACS SECTION 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

NOTE:

ADD 2900' TO GRADING ELEVATIONS SHOWN HEREON TO ADJUST THEM TO THE ASSOCIATED DATUM.
FINISHED GRADE CONTOURS ARE APPROXIMATE. REFER TO SPOT ELEVATION GRADE TAGS FOR CONSTRUCTION STAKING PURPOSES.

BENCHMARK

RIVET & PLATE IN CONCRETE CYLINDER 60 FEET WEST OF MAINWAL AND AZURE

ELEVATION (meters) 901.13
ELEVATION (feet) 2.956.44
NAVD 88

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ENGINEER'S NOTES:

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2. SEE HORIZONTAL CONTROL PLAN FOR EXACT PROPERTY LINE DIMENSIONS
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APPROVED FOR CONSTRUCTION

SOUTHWEST GAS CORPORATION DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

PROJECT NO._____ FIRST APPROVAL DATE:_____
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDENTIAL

LVVWD APPROVAL IS VALID FOR ONE (1) YEAR FROM SIGNATURE DATE. IF CONSTRUCTION IS NOT STARTED, PLANS MUST BE RESUBMITTED FOR REVIEW AND APPROVAL.

HORROCKS ENGINEERS
1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 968-4063
www.horrocks.com

WARNING
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REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

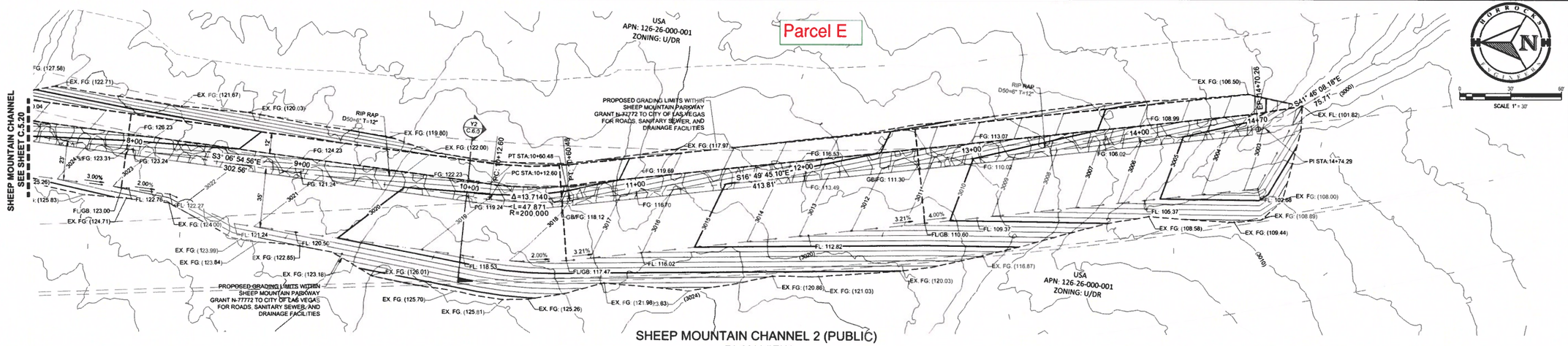
PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY W. BITTON
EXP. 12-31-20
CIVIL
No. 0018
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA

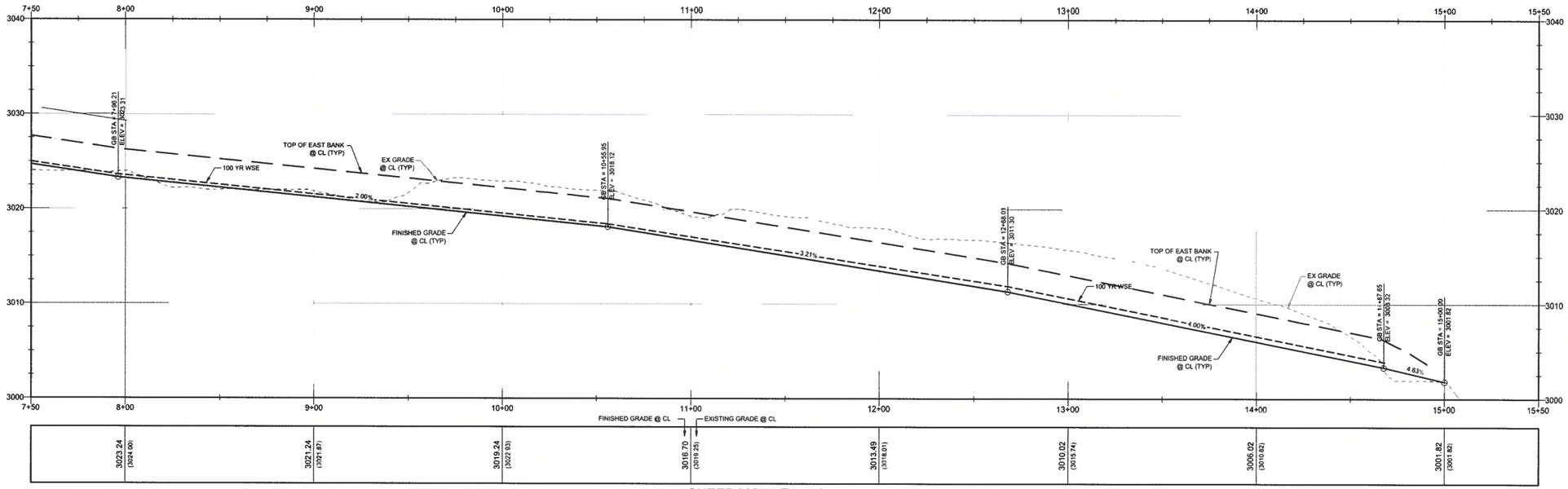
SHEEP MOUNTAIN CHANNEL 1 (STA 0+00 TO STA 7+75)

C.5.20

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SHEEP MOUNTAIN CHANNEL 2 (PUBLIC)
PLAN VIEW
(STA. 7+50 TO 14+70



SHEEP MOUNTAIN CHANNEL 2 (PUBLIC)
PROFILE VIEW
(STA. 7+50 TO 14+70
SCALE: 1" = 30' H
SCALE: 1" = 3' V

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Call before you Dig HIGH VOLTAGE UNDERGROUND UTILITY LINES 48" (122CM) or greater
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CALL BEFORE YOU DIG OVERHEAD
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FREEWAY AND ARTERIAL SYSTEMS OF TRANSPORTATION

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APPROVED FOR CONSTRUCTION

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LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES

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0 1 2

REVISIONS
REV # | DATE
*SEE GENERAL NOTES SHEET

DRAWING INFO
DATE 4/29/2020
DESIGNED SS
DRAWN PMP
CHECKED AD
PROJECT NV-1949-1909

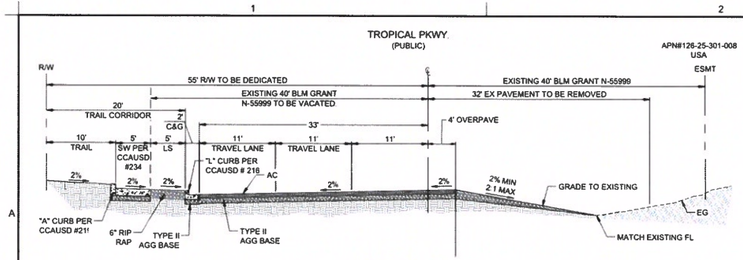
PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY W. BITTON
EXP. 12-31-20
CIVIL
No. 0059
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA

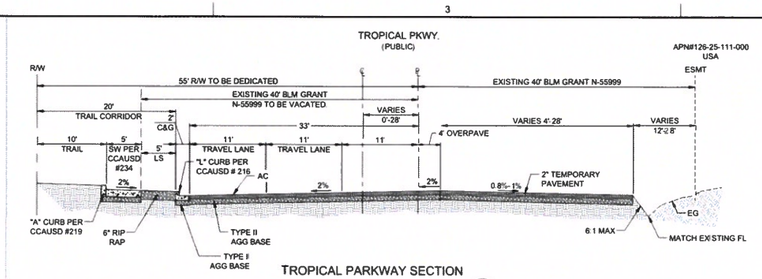
SHEEP MOUNTAIN CHANNEL 2 (STA 7+75 TO STA 15+00)

C.5.21

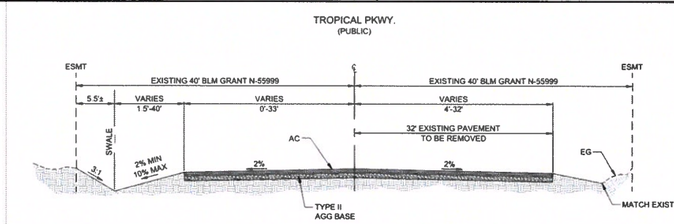
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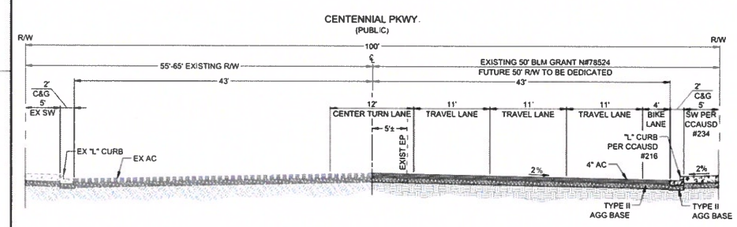
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(REFERENCE CCAUSD #205 & 208)



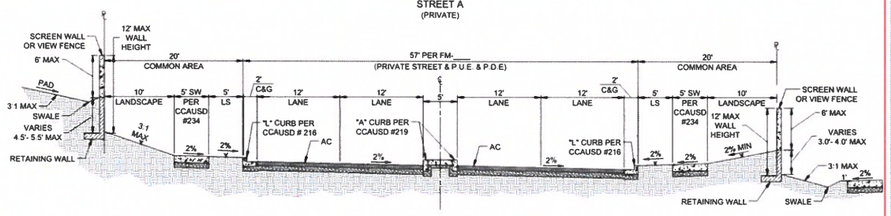
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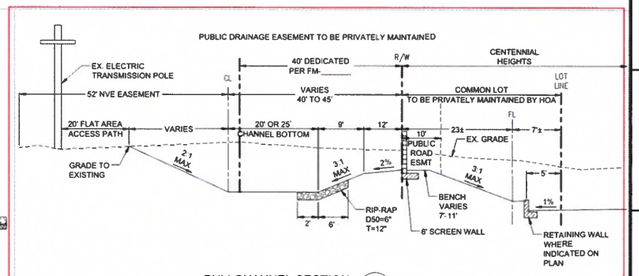
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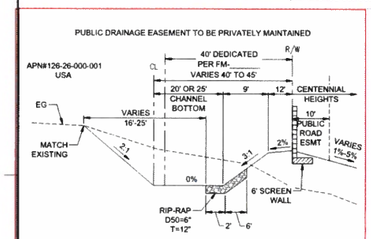
CENTENNIAL PARKWAY SECTION B
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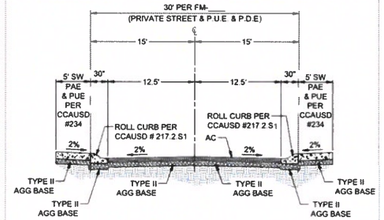
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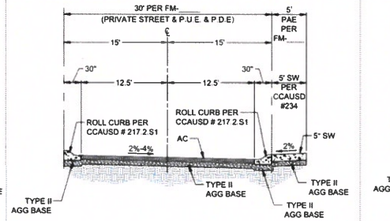
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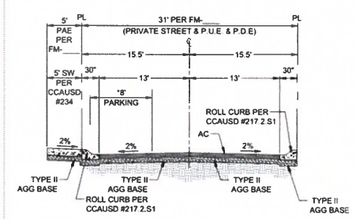
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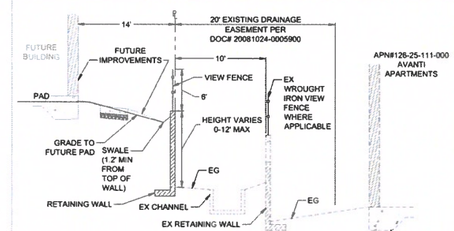
PRIVATE STREET SECTION
NO PARKING (CROWN) E1
SCALE: NTS



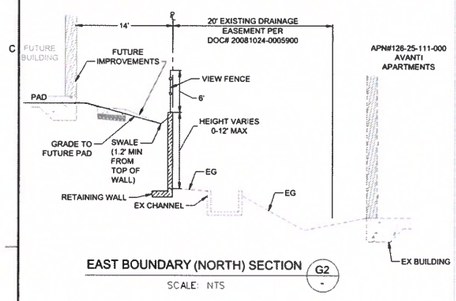
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NO PARKING (X-SLOPE) E2
SCALE: NTS



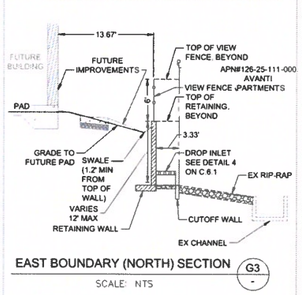
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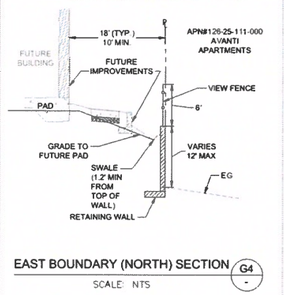
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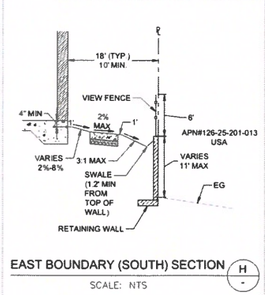
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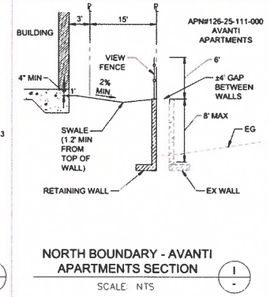
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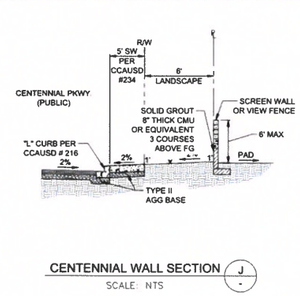
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SCALE: NTS



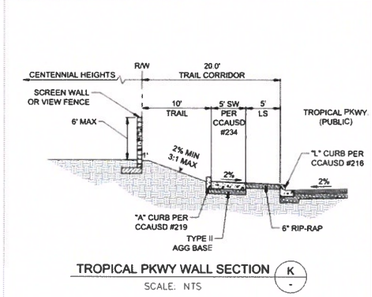
EAST BOUNDARY (SOUTH) SECTION H
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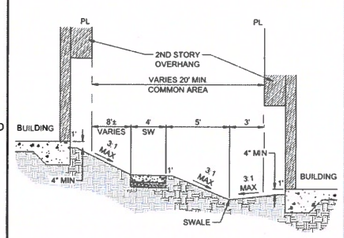
NORTH BOUNDARY - AVANTI
APARTMENTS SECTION I
SCALE: NTS



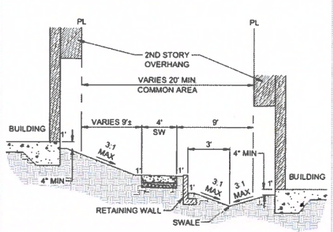
CENTENNIAL WALL SECTION J
SCALE: NTS



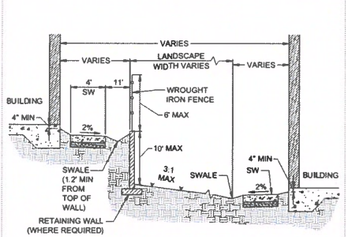
TROPICAL PKWY WALL SECTION K
SCALE: NTS



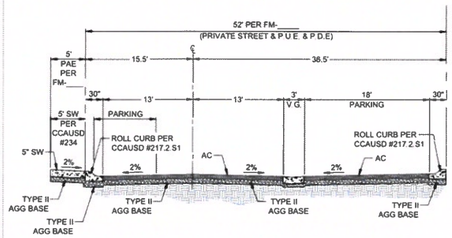
BUILDING SECTION L1
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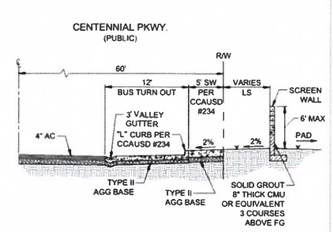
BUILDING SECTION L2
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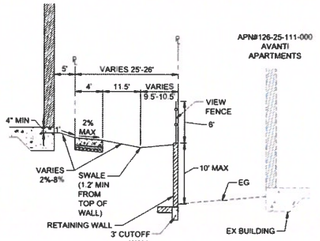
ONSITE GREENBELT SECTION M
SCALE: NTS



PRIVATE STREET SECTION WITH
ADDITIONAL PARKING N
SCALE: NTS



BUS TURN OUT SECTION O
SCALE: NTS
BUS TURN OUT BASED ON CCAUSD STANDARD
DRAWING NO. 234.1 DATED 7/1/16



NORTH BOUNDARY (EAST) SECTION P
SCALE: NTS

Modified with Add3

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1401 N. Green Valley Pkwy., Suite 160
Henderson, NV 89074
(702) 966-4063
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WARNING
IF THIS BAR DOES NOT MEASURE 2" THEN DRAWING IS NOT TO SCALE
0 1 2

REVISIONS		
REV #	DATE	
1		

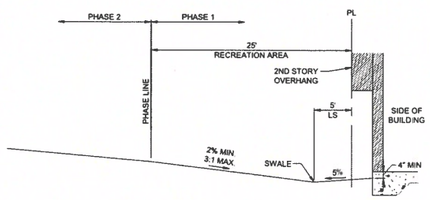
*SEE GENERAL NOTES SHEET

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DATE	6/11/2020
DESIGNED	SS
DRAWN	PMP
CHECKED	AD
PROJECT	NV-1949-1909

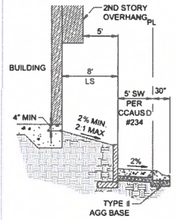
PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY M. BITTON
EXP. 12-31-20
CIVIL
No. 0018
6/11/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA
DETAIL SHEET 1

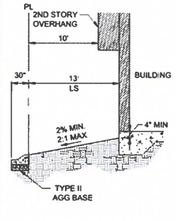
C.6.0
PAGE 96



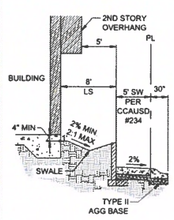
COMMON AREA ADJACENT BUILDINGS (R2)
SCALE: NTS



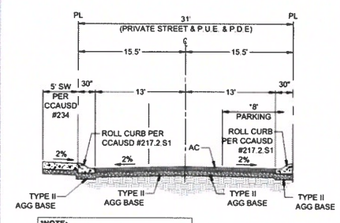
PRIVATE STREET EDGE SECTION (S1)
SCALE: NTS



PRIVATE STREET EDGE SECTION (S2)
SCALE: NTS

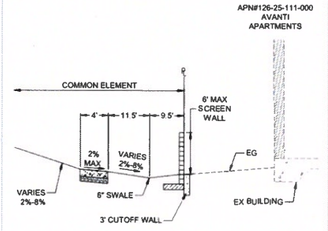


PRIVATE STREET EDGE SECTION (S3)
SCALE: NTS

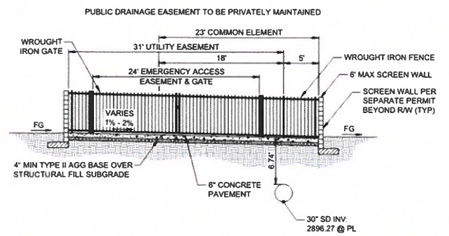


*NOTE:
NO PARKING IN FRONT OF DRIVEWAYS

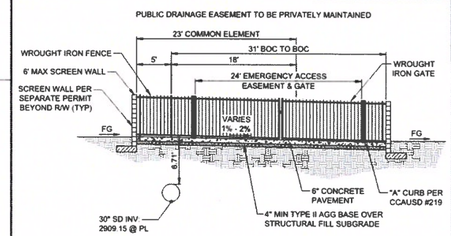
PRIVATE STREET SECTION WITH PARKING (T)
SCALE: NTS



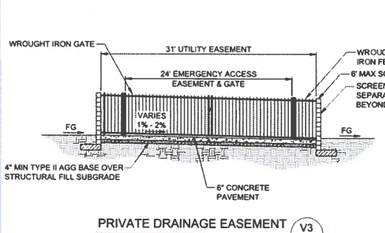
NORTH BOUNDARY (EAST) SECTION
WITHOUT RETAINING WALL (U)
SCALE: NTS



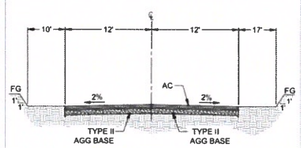
PUBLIC DRAINAGE EASEMENT (V1)
SCALE: NTS



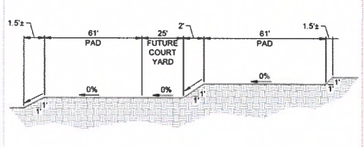
PUBLIC DRAINAGE EASEMENT (V2)
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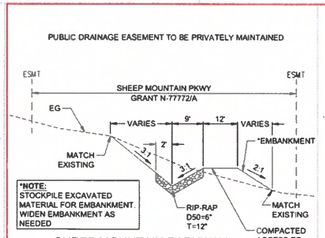
PRIVATE DRAINAGE EASEMENT (V3)
SCALE: NTS



PRIVATE STREET ACCESS ROAD (W)
SCALE: NTS

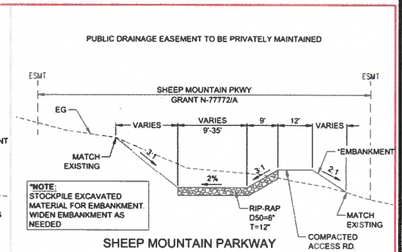


ROUGH GRADING (X)
SCALE: NTS



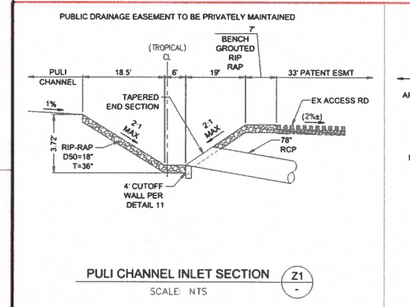
*NOTE:
STOCKPILE EXCAVATED MATERIAL FOR EMBANKMENT. WIDEN EMBANKMENT AS NEEDED

SHEEP MOUNTAIN PARKWAY
V-DITCH SECTION
(STA:1+17.59-3+48.79) (Y1)
SCALE: NTS

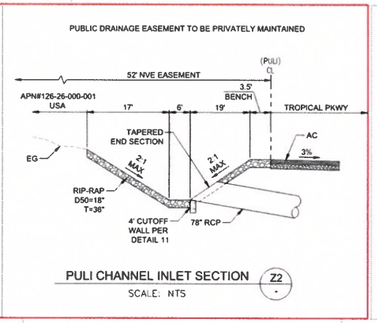


*NOTE:
STOCKPILE EXCAVATED MATERIAL FOR EMBANKMENT. WIDEN EMBANKMENT AS NEEDED

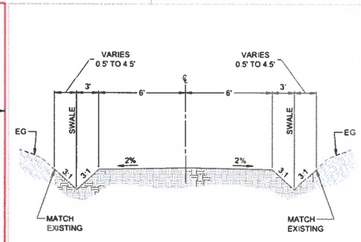
SHEEP MOUNTAIN PARKWAY
CHANNEL SECTION
(STA:3+48.79-14+70.00) (Y2)
SCALE: NTS



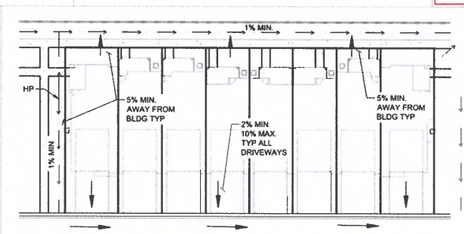
PULI CHANNEL INLET SECTION (Z1)
SCALE: NTS



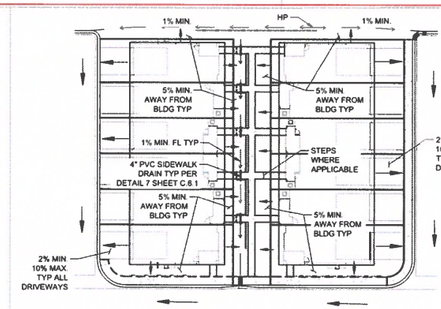
PULI CHANNEL INLET SECTION (Z2)
SCALE: NTS



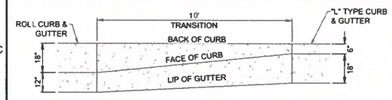
SD-5 COVER SECTION (Z3)
SCALE: NTS



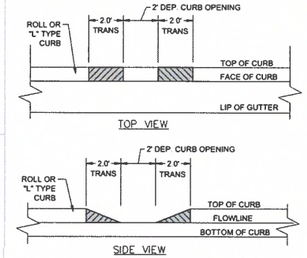
BUILDING GRADING DETAIL
(SIDE TO SIDE) (9)
SCALE: NTS



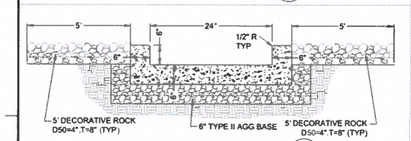
BUILDING GRADING DETAIL
(BACK TO BACK) (10)
SCALE: NTS



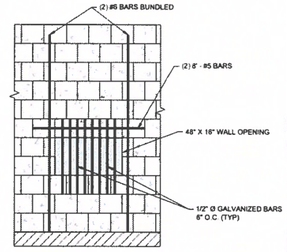
10' CURB TRANSITION (1)
SCALE: NTS



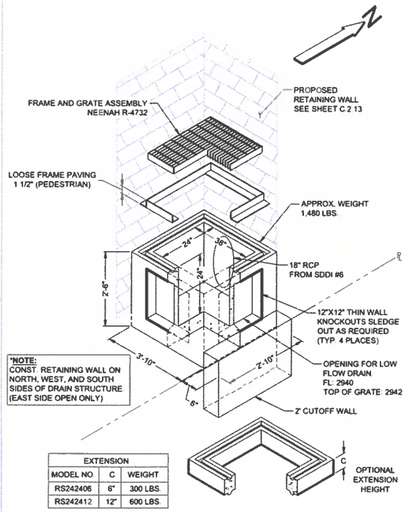
CURB OPENING DETAIL (2)
SCALE: NTS



CONCRETE FLUME DETAIL (5)
SCALE: NTS



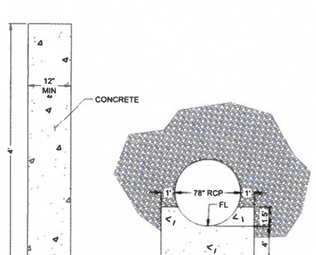
48" X 16" SCREEN WALL OPENING (3)
SCALE: NTS



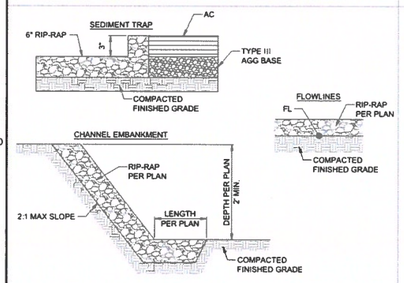
*NOTE:
CONST. RETAINING WALL ON NORTH, WEST, AND SOUTH SIDES OF DRAIN STRUCTURE (EAST SIDE OPEN ONLY)

EXTENSION		
MODEL NO.	C	WEIGHT
RS242406	6"	300 LBS
RS242412	12"	600 LBS

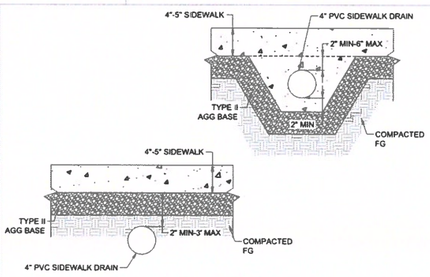
24"x36" BUBBLER DETAIL (4)
SCALE: NTS



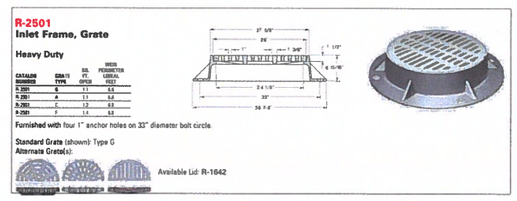
4'x1' CUTOFF WALL (11)
SCALE: NTS



RIP-RAP DETAILS (6)
SCALE: NTS



PVC SIDEWALK DRAIN DETAIL (7)
SCALE: NTS



R-2501 G NEENAH GRATE (9)
SCALE: NTS

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Henderson, NV 89074
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WARNING
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0 1 2

REVISIONS		
REV #	DATE	

*SEE GENERAL NOTES SHEET

DRAWING INFO		
DATE	4/29/2020	
DESIGNED	SS	
DRAWN	PMP	
CHECKED	AD	
PROJECT	NV-1949-1909	

PROFESSIONAL ENGINEER - STATE OF NEVADA
LARRY M. BITTON
EXP. 12-31-20
CIVIL
No. 0069
4/29/2020

CENTENNIAL HEIGHTS TOWNHOMES PHASE 1
TECHNICAL DRAINAGE STUDY
CITY OF LAS VEGAS, NEVADA
DETAIL SHEET 2

C.6.1

PAGE 45

H:\2019\NV-1949-1909 Centennial Heights Townhomes\Project Data\02 CAD\2 03 Sheet Files\Phase 1\NV-1949-1909_C.6.0_PH1_DET.dwg - C.6.1 - 4/30/2020 12:24pm, shayans

APPENDIX D

Planning and Zoning Conditions

V

LAS VEGAS CITY COUNCIL

CAROLYN G. GOODMAN
Mayor

MICHELE FIORE
Mayor Pro Tem

STAVROS S. ANTHONY
CEDRIC CREAR
BRIAN KNUDSEN
VICTORIA SEAMAN
OLIVIA DÍAZ

SCOTT D. ADAMS
City Manager

DEPARTMENT OF PLANNING

ROBERT SUMMERFIELD
DIRECTOR

DEVELOPMENT SERVICES CENTER

333 N. RANCHO DRIVE
3RD FLOOR
LAS VEGAS, NV 89106

702.229.6301 | VOICE
702.474.7463 | FAX
711 | TTY

cityoflasvegas
lasvegasnevada.gov

April 16, 2020

Mr. Chris Armstrong
190 Octane FT Partners, LLC
11411 Southern Highlands Parkway, Suite #300
Las Vegas, Nevada 89141

RE: GPA-78033 [PRJ-77997] - GENERAL PLAN AMENDMENT RELATED TO ZON-78241, VAC-78242 AND TMP-78365 CITY COUNCIL MEETING OF APRIL 15, 2020

Dear Mr. Armstrong:

The City Council at a regular meeting held on April 15, 2020 voted to ***APPROVE*** your request for a General Plan Amendment FROM: PF (PUBLIC FACILITIES) AND DR (DESERT RURAL DENSITY RESIDENTIAL) TO: PCD (PLANNED COMMUNITY DEVELOPMENT) on 275.80 acres on the west side of Puli Road between Farm Road and Tropical Parkway (portions of APNs 126-26-000-001, 126-23-000-003 and 126-14-000-003), Ward 6 (Fiore) [PRJ-77997].

The Notice of Final Action was filed with the Las Vegas City Clerk on April 16, 2020.

Sincerely,

Robert Summerfield

Robert Summerfield, AICP
Director
Department of Planning

RTS:PL:clb

cc: Ms. Chelsea Jensen
Slater Hanifan Group
5740 South. Arville Street, Suite #216
Las Vegas, Nevada 89118

V

LAS VEGAS CITY COUNCIL
CAROLYN G. GOODMAN
Mayor
MICHELE FIORE
Mayor Pro Tem
STAVROS S. ANTHONY
CEDRIC CREAR
BRIAN KNUDSEN
VICTORIA SEAMAN
OLIVIA DÍAZ

SCOTT D. ADAMS
City Manager

DEPARTMENT OF PLANNING
ROBERT SUMMERFIELD
DIRECTOR

DEVELOPMENT SERVICES CENTER
333 N. RANCHO DRIVE
3RD FLOOR
LAS VEGAS, NV 89106
702.229.6301 | VOICE
702.474.7463 | FAX
711 | TTY

cityoflasvegas
lasvegasnevada.gov

April 16, 2020

Mr. Chris Armstrong
190 Octane FT Partners, LLC
11411 Southern Highlands Parkway, Suite #300
Las Vegas, Nevada 89141

RE: TMP-78365 [PRJ-77997] - TENTATIVE MAP RELATED TO GPA-78033, ZON-78241 AND VAC-78242
CITY COUNCIL MEETING OF APRIL 15, 2020

Dear Mr. Armstrong:

The City Council at a regular meeting held on April 15, 2020 voted to ***APPROVE*** your request for a Tentative Map FOR A 12-LOT MASTER PLANNED RESIDENTIAL SUBDIVISION on 275.80 acres on the west side of Puli Road between Farm Road and Tropical Parkway (portions of APNs 126-26-000-001, 126-23-000-003 and 126-14-000-003), U (Undeveloped) Zone [DR (Desert Rural Density Residential) General Plan Designation] and C-V (Civic) Zone [PROPOSED: PD (Planned Development)], Ward 6 (Fiore) [PRJ-77997].

This approval is subject to the following conditions:

Planning

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

2. Approval of a General Plan Amendment (GPA-78033) and Rezoning (ZON-78241) and approval of and conformance to the conditions of approval of a Petition to Vacate (VAC-78242) shall be required, if approved.

3. All development shall conform to the BLM 270 Design Guidelines and related exhibits or Title 19, as applicable. A Site Development Plan Review is required for development of one or more Builder Parcels.

4. All future child tentative maps proposed within the boundaries of this large-lot tentative map shall clearly indicate the locations and segments of all trails identified by the Trails Element of the Las Vegas 2020 Master Plan and the BLM 270 Design Guidelines as applicable.

5. All future child tentative maps proposed within the boundaries of this large-lot tentative map shall provide perimeter wall details and elevations in conformance with the standards and procedures contained within the BLM 270 Design Guidelines as applicable.

6. Conceptual landscape plans for the perimeters of Builder Parcels contained within the boundaries of this tentative map shall be submitted concurrently with submittal of a Site Development Plan Review for Builder Parcels.

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

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

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

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

Public Works

11. A Petition of Vacation, such as VAC-78242, to eliminate Bureau of Land Management (BLM) rights-of-way and City of Las Vegas utility easements within this site shall record immediately prior to (concurrent with) the appropriate phase of the Final Map for this site.

12. Dedicate the appropriate rights-of-way for Dorrell Lane, Centennial Parkway, and each Neighborhood Collector street with the first Final Map for this site unless otherwise allowed by the City Engineer. Additionally grant a Multi-Use Non-Equestrian Easement over the portion of the proposed Puli alignment trail that is outside of the public right-of-way. All Trails, Common Elements, and private improvements in the public right-of-way are to be maintained by the Master Homeowner's Association.

13. Grant minimum 20-foot wide Public Sewer Easements through Parcels D-2 and C-1, to provide public sewer access to Parcels D-1 and C-2, respectively.

14. Provide easements for all required public infrastructure (sewer, drainage, traffic, etc.) that are located outside of the public rights-of-way as well as access for each designated builder parcel to a public street. The City Traffic Engineer reserves the right to require sidewalk ramps and associated easements throughout this site to improve walkability.

15. Prior to the recordation of the first Final Map for this site, construct all public streets to meet the standards approved in ZON-78241. A conceptual bond for full improvements of Dorrell Lane and Centennial Parkway may be used in lieu of constructing these improvements for purposes of recording a large lot Final Map.

16. Public Streetlights shall match those approved in Skye Canyon. Prior to final acceptance of offsite improvements, the applicant shall provide two spare streetlight poles.

17. The submitted Sanitary Sewer Master Plan must be approved by the Sanitary Sewer Planning Section of the Department of Public Works prior to submittal of civil improvement plans for sanitary sewers. Revise the sewer paths to connect sewer from Parcels A-1 & A-2 to Farm Road. All related development must comply with all requirements of the approved Master Sewer Plan.

18. Extend oversized public sewer in Tropical Parkway to the west edge of this development. Reserve, dedicate, or grant a 40-foot wide public sewer easement for the Tropical Parkway alignment, or other dimension as allowed by City Engineer. Portions of this site are dependent on the construction of public sewer segments that do not currently exist. If not constructed or guaranteed by another development, construct the required sewer lines to connect this site to a public sewer line as required by the Department of Public Works.

19. A minimum two lanes of asphalt pavement on all public streets providing the main access to Designated Builder Parcels and a working sanitary sewer connection shall be provided prior to a final inspection of any individual dwelling units within this Tentative Map.

20. 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.

21. Submit a License Agreement for landscaping and private improvements in the public right-of way (Puli Road alignment) prior to the issuance of permits for these improvements. The applicant must carry an insurance policy for the term of the License Agreement and add the City of Las Vegas as an additionally insured entity on this insurance policy. If requested by the City, the applicant shall remove property within the public right-of-way at the applicant's expense pursuant to the terms of the City's License Agreement. The installation and maintenance of all private improvements in the public right of way shall be the responsibility of the applicant and any successors in interest to the property and assigns pursuant to the terms of the License Agreement. Coordinate all requirements for the License Agreement with the Land Development Section of the Department of Building and Safety (702-229-4836).

22. A Master 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, the submittal of any construction drawings, or the recordation of a map whichever may occur first. The Traffic Impact Analysis shall include a pedestrian circulation/access plan to identify nearby pedestrian attractors and recommend measures to accommodate pedestrians, such as but not limited to pedestrian access, crosswalk, pedestrian activated flashers and temporary sidewalks. Comply with the recommendations of the approved update to the Traffic Impact Analysis prior to occupancy of the site. 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.

23. A Master 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, submittal of any construction drawings, or the recordation of a map, 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.

24. The approval of all Public Works related improvements shown on this Tentative Map is in concept only. Cross Sections provided may be used in construction provided that their uses in roadway designs are acceptable to the Department of Public Works. Specific design and construction details relating to size, type and/or alignment of improvements, including but not limited to street, sewer and drainage improvements, shall be resolved prior to approval of the construction plans by the City. Roadway locations and parcel entries are schematic and final studies and engineering improvements designs. Geometric design of Parcel entry points must be approved through the development review of each parcel.

The Notice of Final Action was filed with the Las Vegas City Clerk on April 16, 2020.

Sincerely,

Robert Summerfield

Robert Summerfield, AICP
Director
Department of Planning

RTS:PL:clb

cc: Ms. Chelsea Jensen
Slater Hanifan Group
5740 South Arville Street, Suite #216
Las Vegas, Nevada 89118

LAS VEGAS CITY COUNCIL

CAROLYN G. GOODMAN
Mayor

MICHELE FIORE
Mayor Pro Tem

STAVROS S. ANTHONY
CEDRIC CREAR
BRIAN KNUDSEN
VICTORIA SEAMAN
OLIVIA DÍAZ

SCOTT D. ADAMS
City Manager

DEPARTMENT OF PLANNING

ROBERT SUMMERFIELD
DIRECTOR

DEVELOPMENT SERVICES CENTER

333 N. RANCHO DRIVE
3RD FLOOR
LAS VEGAS, NV 89106

702.229.6301 | VOICE
702.474.7463 | FAX
711 | TTY

cityoflasvegas
lasvegasnevada.gov

April 16, 2020

Mr. Chris Armstrong
190 Octane FT Partners, LLC
11411 Southern Highlands Parkway, Suite #300
Las Vegas, Nevada 89141

RE: VAC-78242 [PRJ-77997] - VACATION RELATED TO GPA-78033, ZON-78241 AND TMP-78365
CITY COUNCIL MEETING OF APRIL 15, 2020

Dear Mr. Armstrong:

The City Council at a regular meeting held on April 15, 2020 voted to ***APPROVE*** your request for a Petition to Vacate Bureau of Land Management right-of-way grants generally located on the west side of Puli Road between Farm Road and Tropical Parkway, Ward 6 (Fiore) [PRJ-77997].

This approval is subject to the following conditions:

1. The limits of this Petition of Vacation shall be portions of Bureau of Land Management (BLM) Right-of-Way Grant N-77772 and portions of BLM Patent Reservation N-96824 located on the west side of Puli Road between Farm Road and Tropical Parkway as submitted on the site plan date stamped January 16, 2020.

2. This Order of Relinquishment shall record immediately prior to and concurrent with a mapping action that subdivides this site.

3. The Order of Relinquishment shall be modified to reserve any easements required for future public infrastructure (sewer and drainage).

4. A Drainage Plan and Technical Drainage Study must be submitted to and approved by the Department of Public Works prior to the recordation of the Order of Relinquishment for this application. Appropriate drainage easements shall be reserved if recommended by the approved Drainage Plan/Study. The drainage study required by TMP-78365 may be used to satisfy this requirement provided that it addresses the area to be vacated.

5. All public improvements, if any, adjacent to and in conflict with this vacation application are to be modified, as necessary, at the applicant's expense prior to the recordation of an Order of Relinquishment.

6. Reservation of easements for the facilities of the various utility companies together with reasonable ingress thereto and egress there from shall be provided if required.

7. All development shall be in conformance with code requirements and design standards of all City Departments.

8. The Order of Relinquishment of Interest shall not be recorded until all of the conditions of approval have been met provided, however, the conditions requiring modification of public improvements may be fulfilled for purposes of recordation by providing sufficient security for the performance thereof in accordance with the Subdivision Ordinance of the City of Las Vegas. City Staff is empowered to modify this application if necessary because of technical concerns or because of other related review actions as long as current City right-of-way requirements are still complied with and the intent of the vacation application is not changed. If applicable, a five foot wide easement for public streetlight and fire hydrant purposes shall be retained on all vacation actions abutting public street corridors that will remain dedicated and available for public use. Also, if applicable and where needed, public easement corridors or other easements that would/should cross any right-of-way being vacated must be retained.

9. If the Order of Relinquishment of Interest is not recorded within one (1) year after approval by the City of Las Vegas or an Extension of Time is not granted by the Planning Director, then approval will terminate and a new petition must be submitted.

The Notice of Final Action was filed with the Las Vegas City Clerk on April 16, 2020.

Sincerely,

Robert Summerfield

Robert Summerfield, AICP
Director
Department of Planning

RTS:PL:clb

cc: Ms. Chelsea Jensen
Slater Hanifan Group
5740 South Arville Street, Suite #216
Las Vegas, Nevada 89118

V

LAS VEGAS CITY COUNCIL

CAROLYN G. GOODMAN
Mayor

MICHELE FIORE
Mayor Pro Tem

STAVROS S. ANTHONY
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cityoflasvegas
lasvegasnevada.gov

April 16, 2020

Mr. Chris Armstrong
190 Octane FT Partners, LLC
11411 Southern Highlands Parkway, Suite # 300
Las Vegas, Nevada 89141

RE: ZON-78241 [PRJ-77997] - REZONING RELATED TO GPA-78033, VAC-78242 AND TMP-78365
CITY COUNCIL MEETING OF APRIL 15, 2020

Dear Mr. Armstrong:

The City Council at a regular meeting held on April 15, 2020 voted to ***APPROVE*** your request for a Rezoning FROM: U (UNDEVELOPED) [DR (DESERT RURAL DENSITY RESIDENTIAL) GENERAL PLAN DESIGNATION] AND C-V (CIVIC) TO: PD (PLANNED DEVELOPMENT) on 275.80 acres on the west side of Puli Road between Farm Road and Tropical Parkway (portions of APNs 126-26-000-001, 126-23-000-003 and 126-14-000-003), Ward 6 (Fiore) [PRJ-77997].

The Notice of Final Action was filed with the Las Vegas City Clerk on April 16, 2020.

Sincerely,

Robert Summerfield

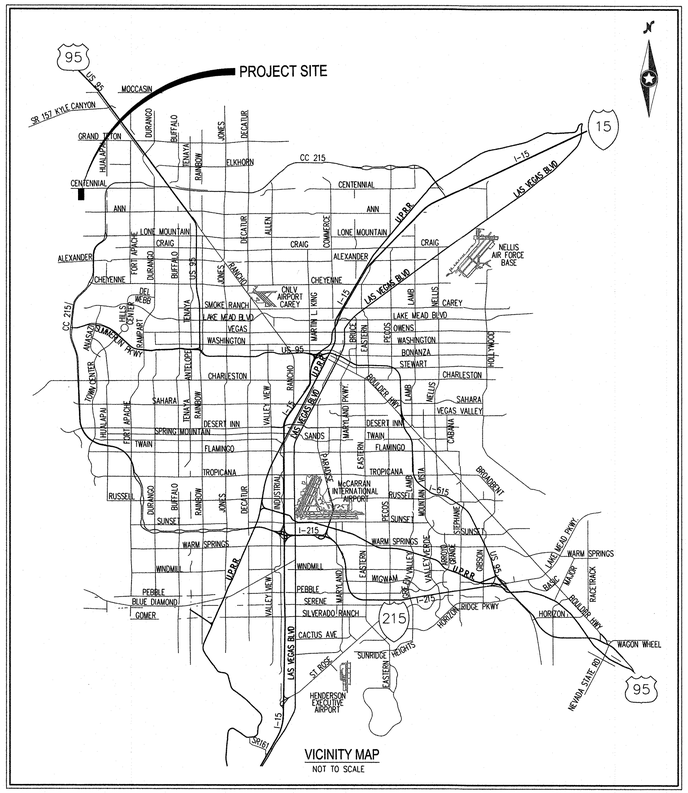
Robert Summerfield, AICP
Director
Department of Planning

RTS:PL:clb

cc: Ms. Chelsea Jensen
Slater Hanifan Group
5740 South Arville Street, Suite #216
Las Vegas, Nevada 89118

APPENDIX E

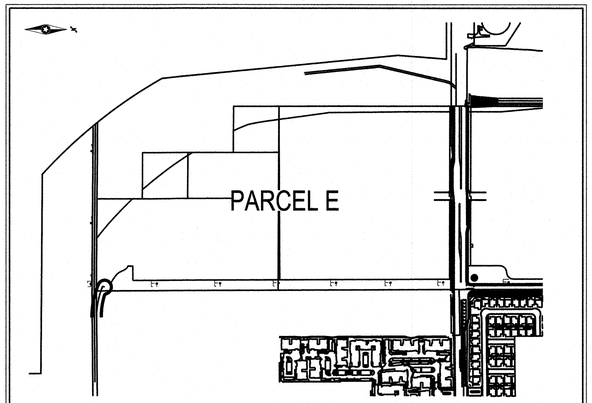
Grading Plan and Detail Sheets



190 OCTANE FT PARTNERS LLC

IMPROVEMENT PLANS FOR PARCEL E MASS GRADING

CITY OF LAS VEGAS, NEVADA
RESIDENTIAL SUBDIVISION
APN: 126-26-000-003



SITE MAP
NOT TO SCALE

SHEET INDEX

NO.	SHEET	TITLE
1	C-1	COVER SHEET
2	C-2	STANDARD NOTES
3	C-3	LEGEND, ABBREVIATIONS, & QUANTITIES
4	MG	MASS GRADING PLAN
5	G-1	GRADING SHEET I
6	G-2	GRADING SHEET II
7	G-3	GRADING SHEET III
8	G-4	GRADING SHEET IV
9	G-5	GRADING SHEET V
10	D-1	GRADING SECTIONS

APPROVALS

CITY OF LAS VEGAS ENGINEER APPROVAL

LAS VEGAS FIRE AND RESCUE DATE

CITY OF LAS VEGAS PLANNING DEPARTMENT

CENTRAL TELEPHONE CO. DBA CENTURYLINK DATE

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

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES
PROJECT NO. ###### FIRST APPROVED DATE: -
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 20 GPM
SHEETS: ADD FIELD

NV ENERGY 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.

SOUTHWEST GAS CORPORATION DATE

COX COMMUNICATIONS LAS VEGAS, INC. DATE

OWNER/DEVELOPER
190 OCTANE, LLC
c/o OLYMPIA COMPANIES, LLC
11411 SOUTHERN HIGHLANDS
PARKWAY, SUITE 300
LAS VEGAS, NV 89118
PH: (702) 220-6565
FX: (702) 220-6566

ENGINEER
WESTWOOD PROFESSIONAL SEVICES, INC.
5740 S. ARVILLE STREET, SUITE 216
LAS VEGAS, NV 89118
PH: (702) 284-5300
FX: (702) 284-5399
CONTACT: JOSH JOHNSON

LEGAL DESCRIPTION

PARCELS E1 & E2 OF PARENT FINAL MAP OF BLM 270 AS SHOWN BY MAP THEREOF ON FILE IN BOOK 162 OF PLATS, PAGE 55, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

BENCHMARK

BENCHMARK NUMBER: 6LV9913W4

RIVET AND PLATE ON TOP OF CURB AT THE NORTHEAST CORNER OF FARM ROAD AND MAINWAL BLVD.

ELEVATION = 3054.93 FEET, 931.43 METERS
N.A.V.D. 88 DATUM

PER THE CITY OF LAS VEGAS VERTICAL CONTROL WEBSITE

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (AREA OUTSIDE THE 500 YEAR FLOODPLAIN), PER THE FEMA FIRM PANELS 32003C1750E DATED SEPTEMBER 27, 2002

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 ZONE

DATUM (REFERENCE FRAME): NAD 1983(2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

PROJECTION: TRAVERSE 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.

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

SWPPP NOTE

NOTE: ALL LAND SURFACE AREA DISTURBANCES OVER 1 ACRE REQUIRE A STORMWATER DISCHARGE PERMIT ISSUED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP). A PHASED CONSTRUCTION UNIT IN A CONTIGUOUS SUBDIVISION IS CONSIDERED UNDER CONSTRUCTION UNTIL ALL STRIPPED SURFACE AREAS HAVE BEEN COVERED BY PAVING, BUILDING CONSTRUCTION OR PLANTING. A STORMWATER DISCHARGE PERMIT APPLICATION AND ASSOCIATED INFORMATION MAY BE DOWNLOADED FROM THE WEB SITE: HTTP://WWW.STATE.NV.US/SHPC/STORM01.HTM PROJECTS THAT DISTURB MORE THAN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVR100000 ALONG WITH THE APPROPRIATE FILLING FEE.

PROJECT INFORMATION

ACREAGE (NET): = 61.42 AC

EARTHWORK SUMMARY (UNADJUSTED)

CUT	198,305 CY.
FILL	48,730 CY.
NET	149,575 CY.

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 & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 OR
1-800-227-2600

Westwood
Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE
1				

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E
COVER SHEET

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ

PROJECT NO.
OLY2007-000

NEVADA PROFESSIONAL ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
Exp. 06/30/2021
CIVIL
NO. 15789
7/23/20

C-1
SHEET 1 OF 10

J:\Olv2007-000 blm 270 - parcel e\dwg\temprov\olv2007-000 cvr.dwg 7/23/2020 11:10 AM Joey Portello

STORMWATER RUNOFF MANAGEMENT

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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 CLARK COUNTY 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 TITLE 24.40 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.

LEGAL DESCRIPTION

PARCELS E1 & E2 OF PARENT FINAL MAP OF BLM 270 AS SHOWN BY MAP THEREOF ON FILE IN BOOK 162 OF PLATS, PAGE 55, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

BENCHMARK

BENCHMARK NUMBER: 6LV991.3W4

RIVET AND PLATE ON TOP OF CURB AT THE NORTHEAST CORNER OF FARM ROAD AND MAINWAL BLVD.

ELEVATION = 3054.93 FEET, 931.43 METERS
N.A.V.D. 88 DATUM

PER THE CITY OF LAS VEGAS VERTICAL CONTROL WEBSITE

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 ZONE

DATUM (REFERENCE FRAME): NAD 1983(2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

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

SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION GENERAL NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020
2. MINIMUM HORIZONTAL AND VERTICAL CLEARANCES BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND UTILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRICAL SHALL BE AT LEAST 12-INCHES OR GREATER AS DICTATED BY LOCAL CODES AND STANDARDS.
   A) ANY DEVIATION FROM SPECIFIED MINIMUM CLEARANCES MUST BE APPROVED BY ALL AFFECTED UTILITIES AND/OR MUNICIPALITIES
3. FOR VALVE ADJUSTMENT CONTACT 702-528-7881 14 DAYS PRIOR TO CONSTRUCTION.
4. IN THE EVENT OF NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND STRUCTURES CONTACT 702-365-2099
5. SOUTHWEST GAS STANDBY CONTACT NUMBER (702)-278-8451

SOUTHWEST GAS APPROVAL

SOUTHWEST GAS CORPORATION 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.

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # ADD FIELD (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 REUSED.

GRADING NOTES

1. INDICATED GRADES OTHER THAN T.C., F.G. & GUTTER F.L. ARE ROUGH GRADES.
2. THE ROUGH GRADING PLANS SHALL BE ON THE JOB SITE AT ALL TIMES. THE ROUGH GRADING SHALL BE FINISHED IN CONFORMANCE WITH THE LINES AND GRADES SHOWN ON THE PLANS. THE GRADING QUANTITIES ARE BASED ON THE ELEVATION AND DETAILS SHOWN ON THE PLANS. ANY DEVIATIONS FROM THE PLANS WILL RESULT IN QUANTITY CHANGES.
3. CARE SHALL BE EXERCISED IN GRADING CORNER LOTS.
4. ROUGH PAD ELEVATIONS SHALL BE GRADED TO WITHIN 0.1' OF THE PAD ELEVATIONS SHOWN ON THE PLANS. WHEN GRADING IS COMPLETE PER THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE LOTS CAN BE INSPECTED. AT THAT TIME THE ENGINEER SHALL ALSO DECIDE IF ANY ADDITIONAL DITCHES OR BERMS ARE REQUIRED. THE CONTRACTOR IS REQUESTED NOT TO REMOVE ANY OF HIS ROUGH GRADING EQUIPMENT UNTIL HE RECEIVES GRADING APPROVAL FROM THE ENGINEER.
5. SOILS REPORT PREPARED BY SOUTHWEST GEOTECHNICAL, PROJECT NO. 197111, DATED 01/28/2020.
6. EARTHWORK QUANTITIES (RAW):
   -CUT = 198,305 CUBIC YARDS.
   -FILL = 48,730 CUBIC YARDS

   A) THE ABOVE QUANTITIES DO NOT REFLECT LOSSES DUE TO SUBSIDENCE OR SHRINKAGE.
   B) THE ABOVE QUANTITIES DO REFLECT USING NATIVE MATERIAL IN LIEU OF TYPE I GRAVEL BASE MATERIAL FOR STREET SECTIONS.
   C) THE ABOVE QUANTITIES DO NOT REFLECT ANY EARTHWORK WHICH MAY BE REQUIRED BY THE ENGINEER TO CONSTRUCT ADDITIONAL PROTECTIVE DITCHES OR BERMS NOT SHOWN ON THESE DRAWINGS.

CITY OF LAS VEGAS FIRE AND RESCUE GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE # 6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICT'S - APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 105.6.15
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. IFC § 3310, § 3312
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. IFC § 507.5.7.3
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. IFC § 106.3
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. IFC § 507.2.1, NFPA 24
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. IFC § 507
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. IFC § 507.5.7.1
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. IFC § 507
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: IFC § C102
    - RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
    - COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. IFC § C102.8
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. IFC § C102.10
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.4
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.7
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. IFC § C102.6
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. FOR SYSTEMS PERMITTED TO HAVE ONE SOURCE OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 3 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. IFC § C104
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.3
20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT FIRE APPARATUS ACCESS GRADIENT SHALL NOT EXCEED 6%. IFC § 503.2.7, § 503.2.8
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. IFC § 503.2.4
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. IFC § 503.2.1
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB. NOT LESS THAN 28 FT WIDE WITH PARKING RESTRICTED TO ONE SIDE MEASURED TO FACE OF CURB. NOT LESS THAN 24 FT WIDE WITH NO PARKING ON EITHER SIDE MEASURED TO FACE OF CURB. FIRE LANES THROUGH PARKING LOTS SHALL BE NOT LESS THAN 24 FT. IFC § 503.2.1.1
24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS. ROAD(S) WITH DEAD- ENDS OR A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. CLV REGULATION AND MOU
26. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. CLV REGULATION
27. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT OF FIRE LANES IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. IFC § 503.3
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. IFC § 503.6
29. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEING UTILIZED TO DELIVER FIRE FLOW TO THE PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CLV REGULATION

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.

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, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

UTILITY LOCATION NOTE TO CONTRACTOR

EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS. CALL BEFORE YOU DIG: 1 (800) 227-2600; SOUTHWEST GAS CORPORATION: 702-400-1789 (STANDBY CONTACT NUMBER)

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE ENGINEER AND THE OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMU

ABBREVIATIONS

AC	ASPHALTIC CONCRETE OR ACRE
AGG	AGGREGATE BASE
APN	ASSESSORS PARCEL NUMBER
APPROX OR ~	APPROXIMATE
AVE	AVENUE
@	AT
BC	BEGIN CURVE OR BACK OF CURB
BCR	BEGINNING OF CURB RETURN
BHW	BOTTOM OF HEADWALL
BLDG	BUILDING
BLVD	BOULEVARD
BM	BENCHMARK
BVC	BEGIN VERTICAL CURVE
BWV	BACK WATER VALVE
CC	CLARK COUNTY
CCAUSD	CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS
CCPW	CLARK COUNTY PUBLIC WORKS
CCRFCD	CLARK COUNTY REGIONAL FLOOD DISTRICT
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT
CE	COMMON ELEMENT
CL/C/L/C	CENTERLINE
CLR	CLEAR OR CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CLV	CITY OF LAS VEGAS
CML&C	CEMENT MORTAR LINED AND COATED
CMU	CONCRETE MASONRY UNIT
CNLV	CITY OF NORTH LAS VEGAS
COH	CITY OF HENDERSON
CONC	CONCRETE
CT	COURT
CY OR CU YD	CUBIC YARD
DCWCS	DESIGN AND CONSTRUCTION FOR WASTEWATER COLLECTION SYSTEMS
DE	DRAINAGE EASEMENT
DET	DETAIL
DI	DUCTILE IRON OR DRAIN INLET
DIA, ø	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE
DWG(S)	DRAWING
DWY	DRIVEWAY
EA	EACH
ECR	END CURB RETURN
EG	EXISTING GROUND
ELEV	ELEVATION
ESMT	EASEMENT
EP	EDGE OF PAVEMENT
ERU	EQUIVALENT RESIDENTIAL UNIT
EVC	END VERTICAL CURVE
EX OR EXIST	EXISTING
FC	FACE OF CURB
FF	FINISHED FLOOR
FG	FINISHED GRADE
FGH	FINISHED GRADE, HIGH SIDE
FGL	FINISHED GRADE, LOW SIDE
FH	FIRE HYDRANT
FL	FLOWLINE
FT	FEET OR FOOT
FUT	FUTURE
GRD	GRADE OR GROUND
GB	GRADE BREAK OR GRADE CHANGE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HOA	HOME OWNERS ASSOCIATION
HORZ	HORIZONTAL
HP	HIGH POINT
HWL	HIGH WATER LEVEL
HDWL OR HW	HEADWALL
HYD	HYDRAULIC OR HYDRANT
ID	INSIDE DIAMETER
IN	INCH
INT	INTERSECTION
INV	INVERT ELEVATION
IP	IRON PIPE
IRRG	IRRIGATION
LF	LINEAR FEET
LMC	LANDSCAPE MAINTENANCE CORPORATION
LP	LOW POINT
LT OR L	LEFT
LVVWD	LAS VEGAS VALLEY WATER DISTRICT
LWL	LOW WATER LEVEL
MAX	MAXIMUM
MECH	MECHANICAL
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MUE	MUNICIPAL UTILITY EASEMENT
NDOT	NEVADA DEPARTMENT OF TRANSPORTATION
NTS	NOT TO SCALE
NUE	NONEXCLUSIVE UTILITY EASEMENT
NVE	NV ENERGY
OC	ON CENTER
OD	OUTSIDE DIAMETER OR OVERALL DIMENSION
OFF	OFFSET
ORIG	ORIGINAL
PAE	PUBLIC OR PEDESTRIAN ACCESS EASEMENT
PB	PULL BOX
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PDE	PUBLIC DRAINAGE EASEMENT
℄ OR PL	PROPERTY LINE
POB	POINT OF BEGINNING
POC	POINT OF CURVATURE
POE	POINT OF ENDING
PRC	POINT OF REVERSE CURVATURE
PRELIM	PRELIMINARY
PROP	PROPOSED
PRV	PRESSURE REDUCING VALVE
PUE	PUBLIC UTILITY EASEMENT
PT	POINT OF TANGENT OR POINT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
QTY	QUANTITY
R	RADIUS
RCA	REINFORCED CONCRETE ARCH
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY ESMT	ROADWAY EASEMENT
REQD	REQUIRED
REV	REVISION
RG	ROUGH GRADE
RT OR R	RIGHT
RW, ROW	RIGHT OF WAY
S	SLOPE
SCH	SCHEDULE
SD	STORM DRAIN
SDDI	STORM DRAIN DROP INLET
SDMH	STORM DRAIN MANHOLE
SEC	SECTION
SF	SQUARE FEET
SHT	SHEET
SLTC	STREET LIGHT & TRAFFIC CONTROL ESMT
SNWA	SOUTHERN NEVADA WATER AUTHORITY
SPECS	SPECIFICATIONS
ST	STREET
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STD	STANDARD
STL	STEEL
STLT	STREET LIGHT
SW	SIDEWALK
SWG	SOUTHWEST GAS
SWR OR SS	SANITARY SEWER
SY	SQUARE YARD
TAN	TANGENT
TC	TOP OF CURB
TF	TOP OF FLOOR OR TOP OF FOOTING
TG	TOP OF GRATE
THRU	THROUGH
THW	TOP OF HEADWALL
TP	TOP OF PIPE
TW	TOP OF WALL
TRW	TOP OF RETAINING WALL
TSW	TOP OF SCREEN WALL
TYP	TYPICAL
UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS
UE	UTILITY EASEMENT
VC	VERTICAL CURVE
VERT	VERTICAL
VG	VALLEY GUTTER
WI	WROUGHT IRON
WL	WATER LINE
WPZ	WATER PRESSURE ZONE
WT	WEIGHT
WTR	WATER LINE

SPECIAL NOTE

IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED WHICH IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY OF LAS VEGAS DEPT. OF PUBLIC WORKS. TEMPORARY CONSTRUCTION ITEMS INCLUDE: PAVEMENT TRANSITIONS, PROTECTIVE DITCHES AND BERMS, ROAD SIGNS AND BARRICADES, ETC.

NOTICE TO CONTRACTOR

-QUANTITIES SHOWN ARE ESTIMATES ONLY AND ARE INTENDED TO ILLUSTRATE SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT QUANTITIES INVOLVED.

-EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS. CALL BEFORE YOU DIG: (800) 227-2600

LEGEND

EXISTING	PROPOSED	DESCRIPTION
(1900)	1900	5' CONTOUR
		1' CONTOUR
		STRIPING
		SEWER MANHOLE
		CURB AND GUTTER
EX 8" PVC SS	8" PVC SS	SANITARY SEWER PIPE AND FLOW ARROW
EX 8" PVC WTR	8" PVC WTR	WATER PIPE
		WATER GATE VALVE
		FIRE HYDRANT
		WATER BLOW-OFF
		WATER LATERAL W/ METER
		SANITARY SEWER LATERAL
		STREETLIGHT
		EDGE OF PAVEMENT
		TRAFFIC SIGN
PAD=XXXX FF = XXXX	PAD=XXXX FF = XXXX	PAD ELEVATION FINISHED FLOOR ELEVATION
(XXXX) TC	(XXXX) TC	ELEVATION
		RETAINING WALL
		STORM DRAIN W/ MANHOLE

	EXISTING GAS GATE VALVE
MH	EXISTING UNKNOWN MANHOLE
GAS	EXISTING GAS, SIZE PER PLAN
	EXISTING POWER POLE
	EXISTING TRAFFIC SIGNAL
	EXISTING WALL
	WATER PIPE FITTING
POC	WATER POINT OF CONNECTION
POC	SEWER POINT OF CONNECTION
	DAYLIGHT LINE
	STREET CENTERLINE
	RIGHT-OF-WAY
	MATCHLINE
	BOUNDARY LINE
	PHASE LINE
℄	PROPERTY LINE
	FLOWLINE
	SAWCUT
FILL CUT	CUT/FILL TRANSITION LINE
	SIDEWALK
	EX STRIPING TO BE OBLITERATED
	GRADE BREAK LINE
ID	REFLECTIVE RAISED PAVEMENT MARKERS
BWV	BACK WATER VALVE
	WROUGHT IRON FENCE
	PONY WALL
	DECORATIVE PERIMETER WALL
	DECORATIVE PERIMETER RETAINING WALL
	PROPOSED CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	EXISTING CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	FUTURE CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB

	PROPOSED SCARP AREA
	DRIVEWAY
	PROPOSED RIP RAP
	SIGHT VISIBILITY ZONE PER STD DWG NO. 201.2
	HANDICAP RAMP

QUANTITIES

			PRIVATE	PUBLIC
DRAINAGE				
1.	60" TYPE III STORM DRAIN MANHOLE	EA	–	–
2.	5.0' TYPE "CM2" DROP INLET	EA	–	–
3.	10.0' TYPE "CM2" DROP INLET	EA	–	–
4.	12.5' TYPE "CM2" DROP INLET	EA	–	–
5.	20.0' TYPE "CM2" DROP INLET	EA	–	–
6.	18" RCP CLASS IV STORM DRAIN	LF	–	–
7.	24" RCP CLASS IV STORM DRAIN	LF	–	–
8.	30" RCP CLASS IV STORM DRAIN	LF	–	–
9.	36" RCP CLASS IV STORM DRAIN	LF	–	–
10.	RIPRAP D50=8", THK=16"	SF	–	–
11.	8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	–	–
12.	SIDEWALK UNDER DRAIN	SF	–	–
13.				
SEWER SYSTEM				
1.	4" PVC SEWER LATERAL (PRIVATE)	LF	–	–
2.	8" PVC SEWER PIPE (PUBLIC)	LF	–	–
3.	STANDARD 48" SEWER MANHOLE (PUBLIC)	EA	–	–
4.	8" SEWER PIPE CAP	EA	–	–
5.	BACK WATER VALVE	EA	–	–
6.	8" C-900 WATER QUALITY SEWER PIPE (PUBLIC)	EA	–	–
7.				
WATER SYSTEM				
1.	FIRE HYDRANT ASSEMBLY W/6" GATE VALVE PER UDACS PLATE NO. 40	EA	–	–
2.	6" PVC WATER PIPE (CLASS 150)	LF	–	–
3.	8" PVC WATER PIPE (CLASS 150)	LF	–	–
4.	8" DIP WATER PIPE (CLASS 53)	LF	–	–
5.	8" GATE VALVE WITH VALVE BOX PER UDACS PLATE NO. 30 & 39	EA	–	–
6.	8" X 6" TEE PER UDACS PLATE NO. 31	EA	–	–
7.	8" X 8" TEE PER UDACS PLATE NO. 31	EA	–	–
8.	8" 5 DEGREE BEND WITH RESTRAINED JOINTS	EA	–	–
9.	8" 11.25 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
10.	8" 22.5 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
11.	8" 45 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
12.	8" 90 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
13.	CAP AND 2" BLOW-OFF ASSEMBLY W/CAP PER UDACS PLATE NO. 36	EA	–	–
14.	1" COPPER SERVICE W/ 3/4" METER PER UDACS PLATE NO. 2	EA	–	–
15.	1" COPPER SERVICE W/ 1" METER PER UDACS PLATE NO. 4	EA	–	–
16.	1" COPPER SERVICE W/ 3/4" METER & 1" RPPA PER UDACS PLATE NO. 4 & 8	EA	–	–
		EA	–	
STREET IMPROVEMENTS				
1.	2" A.C. PAVEMENT W/ 4" TYPE II OVER 6" TYPE I AGGREGATE BASE	SY	–	–
2.	STANDARD 18" TYPE "L" ISLAND CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
3.	STANDARD 8" TYPE "A" ISLAND CURB W/6" TYPE I AGGREGATE BASE	LF	–	–
4.	STANDARD 30" TYPE "ROLL" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
5.	4' WIDE CONCRETE SIDEWALK W/4" TYPE II AGGREGATE BASE	SF	–	–
6.				–
7.				
TRAFFIC SIGNALS				
1.	30" STOP SIGN WITH POST (R1-1)	EA	–	–
2.	9" STREET NAME SIGN (D-3, BROWN W/ WHITE LETTERS)(6 POLES x 2 PER POLE=12)	EA	–	–
3.	BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKER	EA	–	–
4.	CROSSWALK MARKINGS	LF	–	–
5.				
6.				
7.				
8.				
DRY UTILITIES				
1.	100W H.P.S. LUMINAIRE STREET LIGHT W/DECORATIVE POLE	EA	–	–
2.	1-1/4" PVC STREET LIGHT CONDUIT WITH (2) #4 AND (1) #8 CONDUCTORS	LF	–	–
3.	NO. 3-1/2 PULL BOX W/METAL COVER	EA	–	–
4.	150 AMP SERVICE PEDESTAL (IRR)	EA	–	–
5.	200 AMP SERVICE PEDESTAL (STLT)	EA	–	–
6.				

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. ____ ADD FIELD ____ FIRST APPROVED DATE: ____







Westwood
5740 S. Arville Street
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Fax (702) 284-5399
westwoodps.com
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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
1					

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E

LEGEND, ABBREVIATIONS, & QUANTITIES

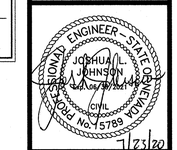
DATE: 07/17/20

DRAFTER: JTP

DESIGNER: JTP

CHECKED: JJ

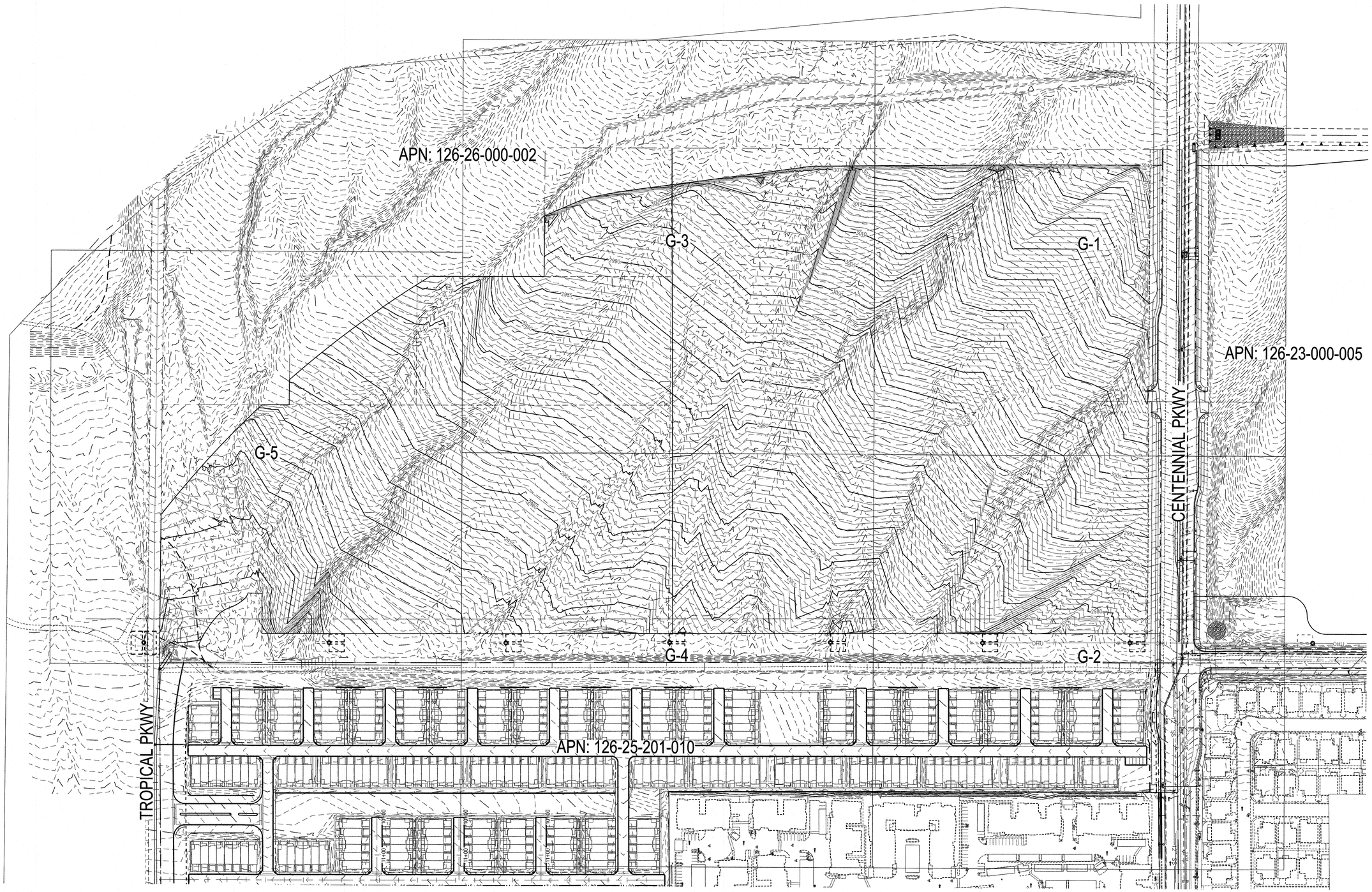
PROJECT NO.
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SHEET 3 OF 10

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BLM 270 - PARCEL E
MASS GRADING PLAN

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ

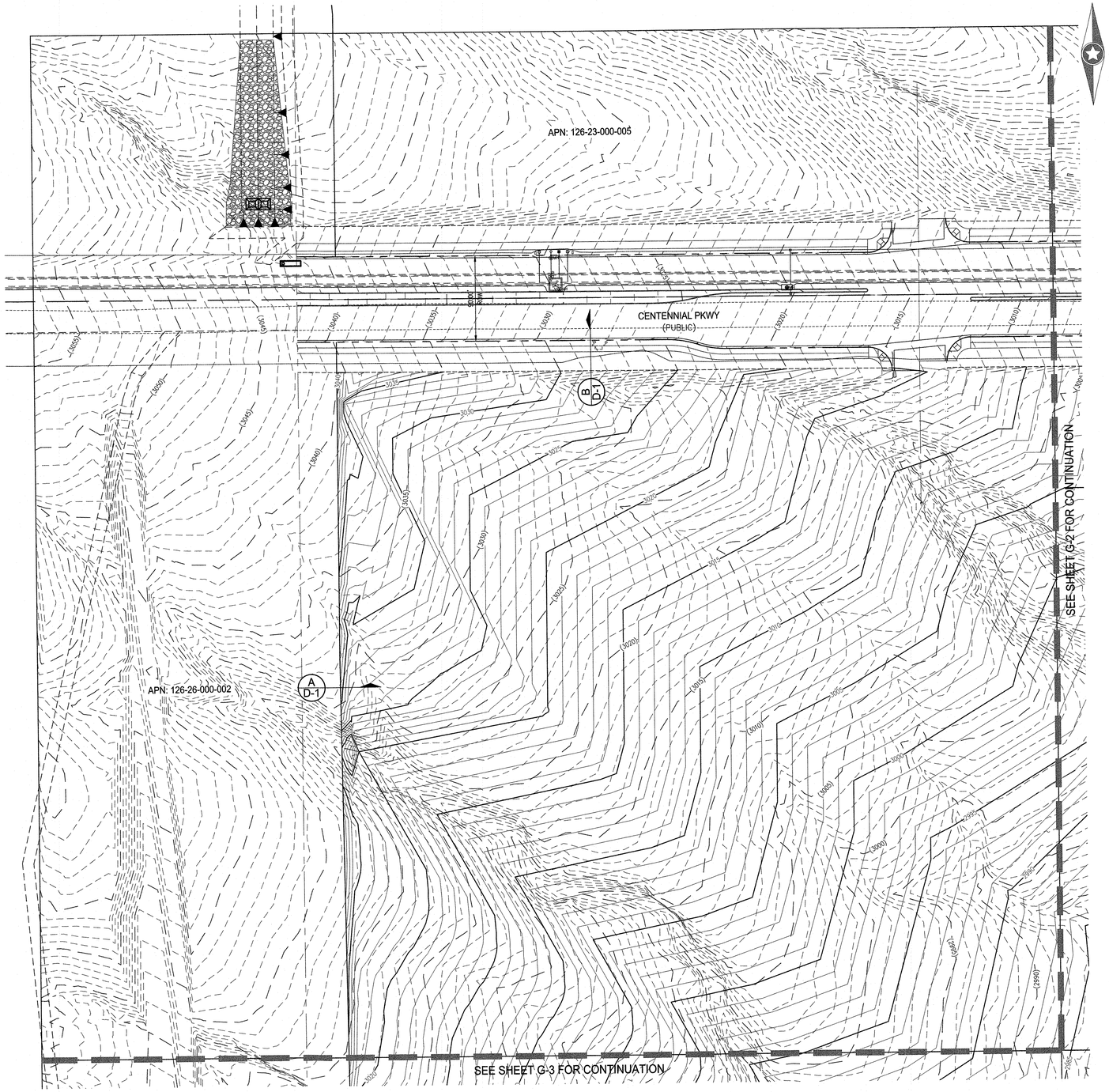
PROJECT NO.
OLY2007-000

PROFESSIONAL ENGINEER STATE OF NEVADA
JOSHUA JOHNSON
Exp. 06/30/2021
No. 15789
CIVIL

7/23/20

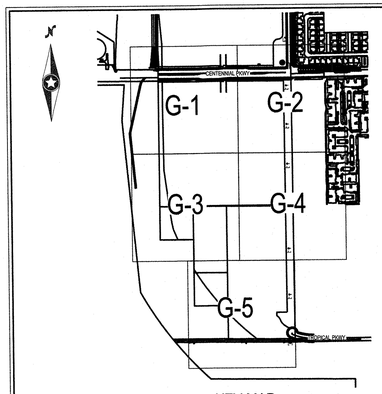
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SCALE – 1"=30'

0 30 60 FEET



KEY MAP
NOT TO SCALE

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CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SURVEY NOTE

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SOILS REPORT

SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 197111 DATED 01/28/2020

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
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FILL= 48,730 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

FLOOD ZONE

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C1750E, DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

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I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY ??????? ON FILE AT CITY OF LAS VEGAS AND CCPW HTE #??-????? FOR THE SUBJECT PROJECT.

JOSH JOHNSON, P.E. #15789 DATE







Westwood
Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
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Las Vegas, NV 89118
westwoodps.com
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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
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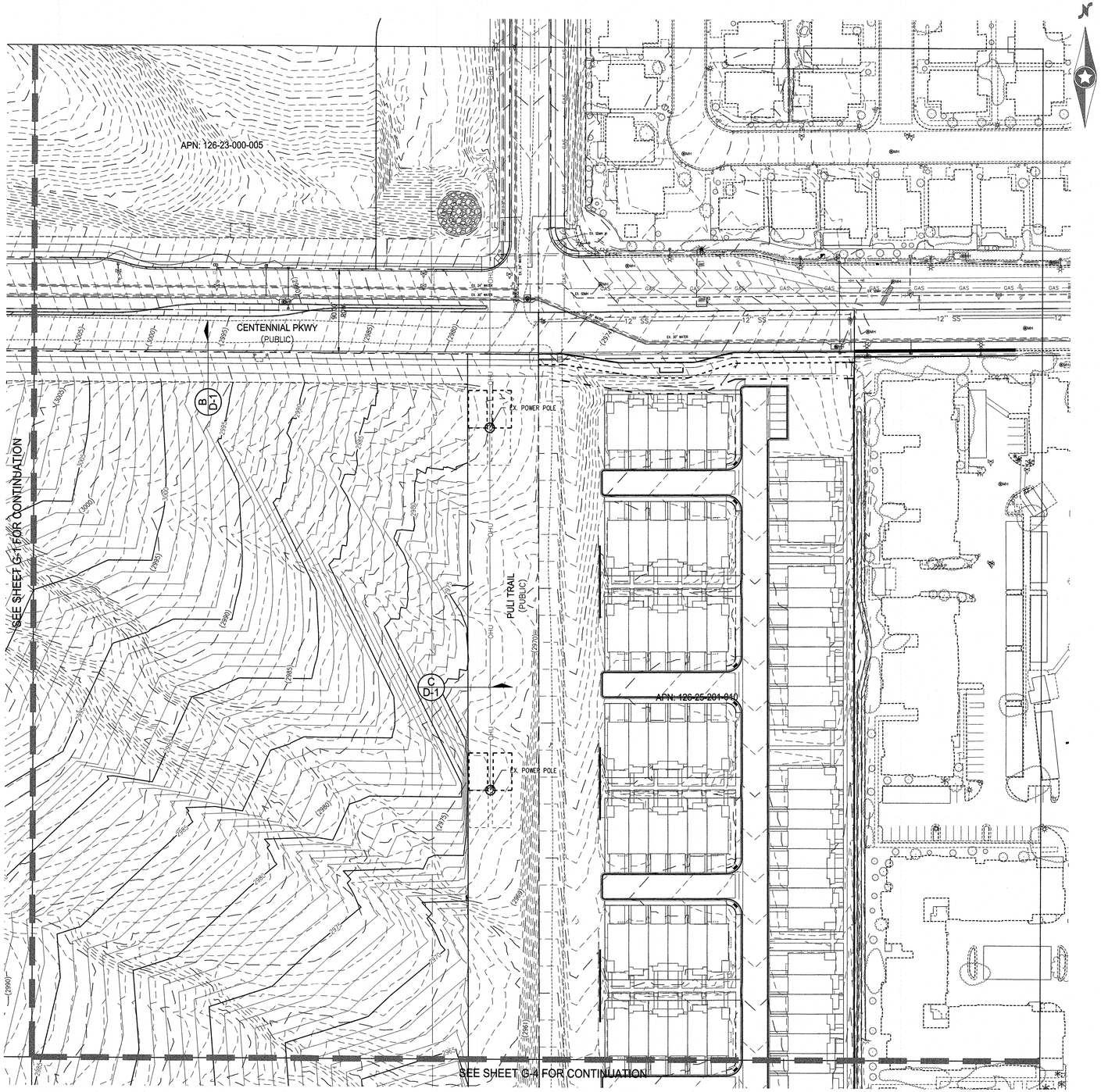
BLM 270 - PARCEL E
GRADING SHEET I

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ
PROJECT NO.
OLY2007-000

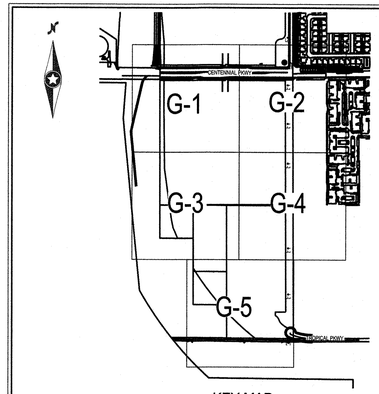
PROFESSIONAL ENGINEER STATE OF NEVADA
JOSHUA L. JOHNSON
CIVIL
No. 15789
7/23/20

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SHEET 5 OF 10

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SCALE = 1"=30' (0, 30, 60 FEET)



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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
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190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E

GRADING SHEET II

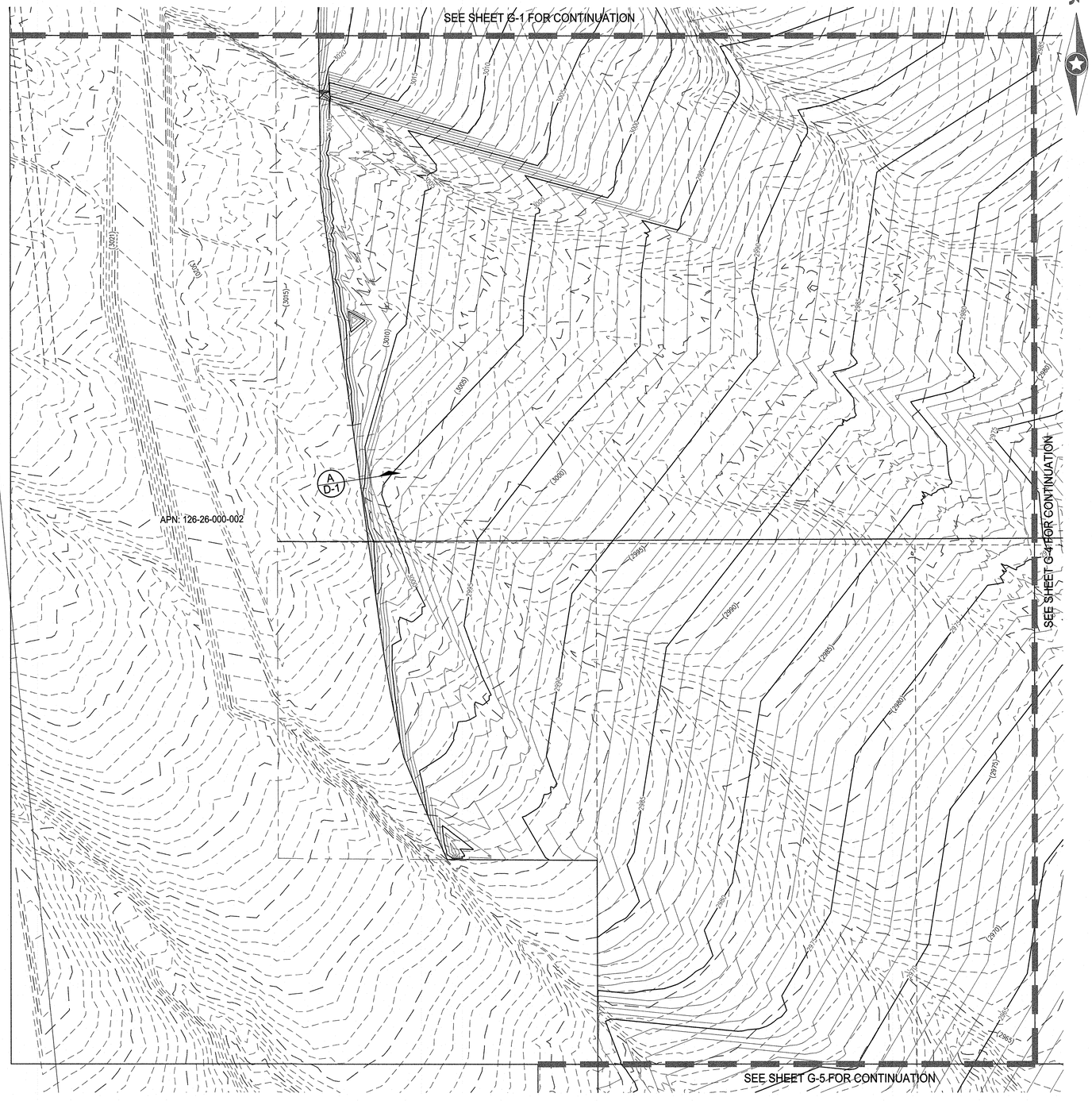
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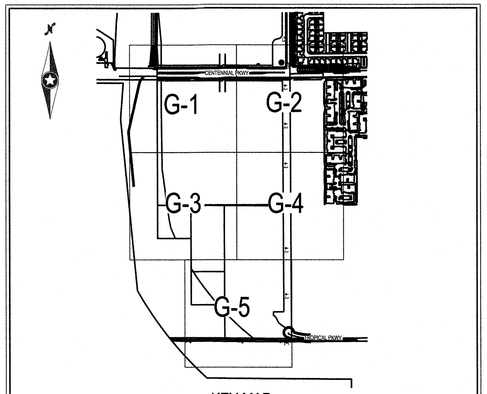
PROFESSIONAL ENGINEER STATE OF NEVADA JOSHUA L. JOHNSON No. 15789 CIVIL 7/23/20

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SHEET 6 OF 10

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SCALE – 1"=30' (0 / 30 / 60 FEET)





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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 CLARK COUNTY TITLE 24.40 AND IN THE LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDANCE MANUAL.
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CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SURVEY NOTE

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SOILS REPORT

SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 197111 DATED 01/28/2020

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 198,305 CU YDS
FILL= 48,730 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

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JOSH JOHNSON, P.E. #15789 DATE







Westwood
Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E

GRADING SHEET III

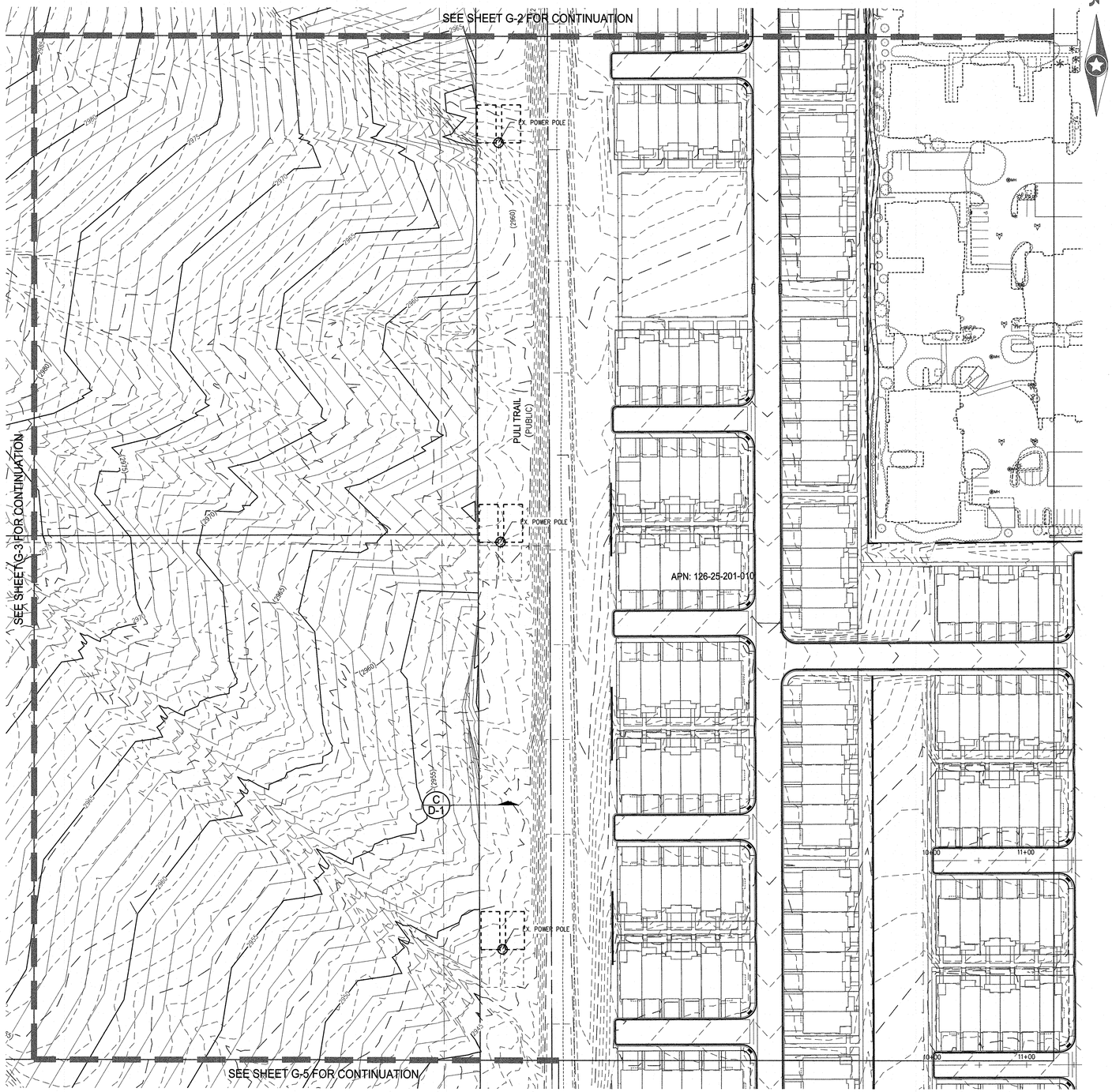
DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ

PROJECT NO.
OLY2007-000

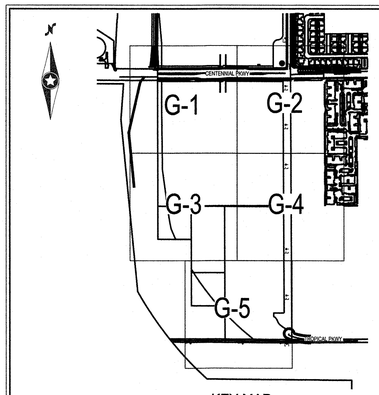
PROFESSIONAL ENGINEER STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15789
CIVIL
7/23/20

G-3
SHEET 7 OF 10

J:\ol\2007-000 blm 270 - parcel e\dwg\improv\ol\2007-000 grd.dwg 7/23/2020 11:12 AM Joey Parello



0 30 60
SCALE – 1"=30' FEET



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 197111 DATED 01/28/2020

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JOSH JOHNSON, P.E. #15789 DATE

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Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
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AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
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Westwood
Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP DATE	APP
1					

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E
GRADING SHEET IV

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ
PROJECT NO.
OLY2007-000

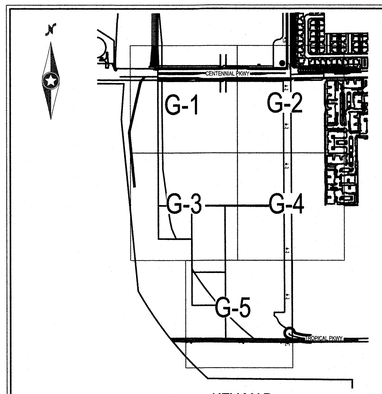
PROFESSIONAL ENGINEER – STATE OF NEVADA
JOSHUA L. JOHNSON
Exp. 06/30/2021
CIVIL
No. 15789
7/23/20

G-4
SHEET 8 OF 10

J:\OLY2007-000 bim 270 - parcel e\civil\improv\OLY2007-000 grd.dwg 7/23/2020 11:12 AM Joey Portelli



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SCALE - 1"=30' FEET



KEY MAP
NOT TO SCALE

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PROJECT NO. 197111 DATED 01/28/2020

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JOSH JOHNSON, P.E. #15789 DATE







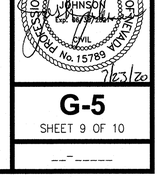
Westwood
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
Phone (702) 284-5300
Fax (702) 284-5399
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
1					

190 OCTANE FT PARTNERS, LLC

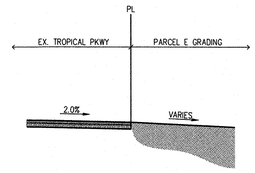
BLM 270 - PARCEL E
GRADING SHEET V

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ
PROJECT NO.
OLY2007-000

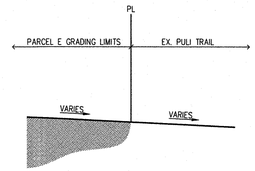


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SHEET 9 OF 10

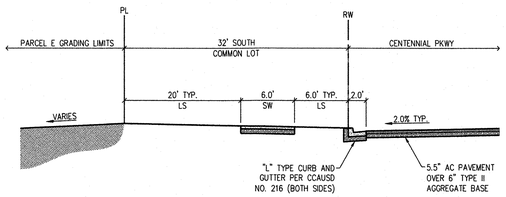
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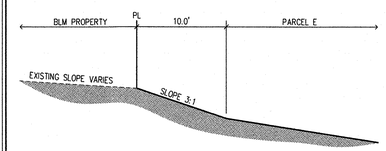
D. SOUTHERN BOUNDARY
NOT TO SCALE



C. EASTERN BOUNDARY
NOT TO SCALE



B. NORTHERN BOUNDARY
NOT TO SCALE



A. WESTWOOD BOUNDARY
NOT TO SCALE

Westwood

Phone (702) 284-5300
Fax (702) 284-5399

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Las Vegas, NV 89118

westwoodps.com

Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
1					

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E
GRADING SECTIONS

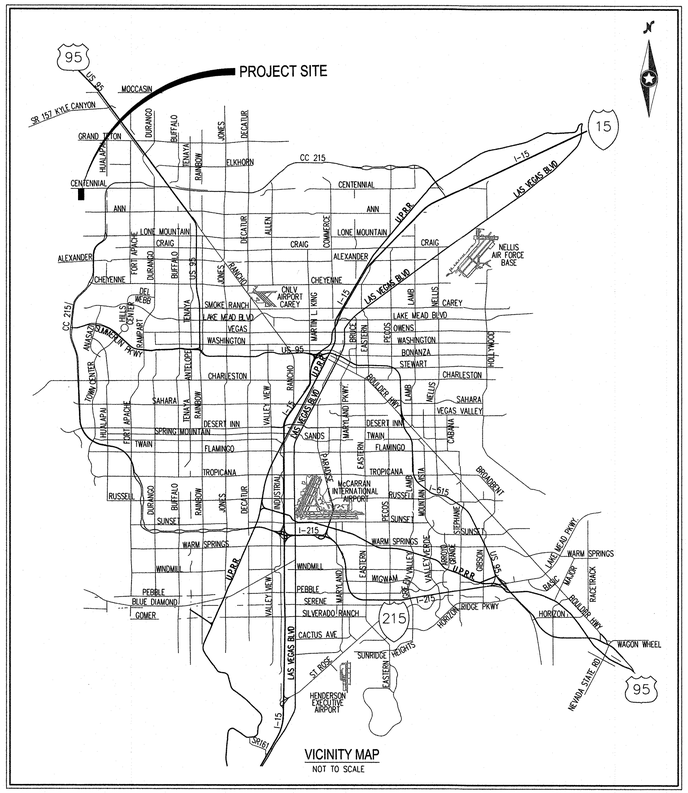
DATE: 07/17/20
DRAFTER: JTP
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NEVADA ENGINEER - STATE OF
JOSHUA J. JOHNSON
No. 15789
PROFESSIONAL ENGINEER
7/23/20

D-1
SHEET 10 OF 10

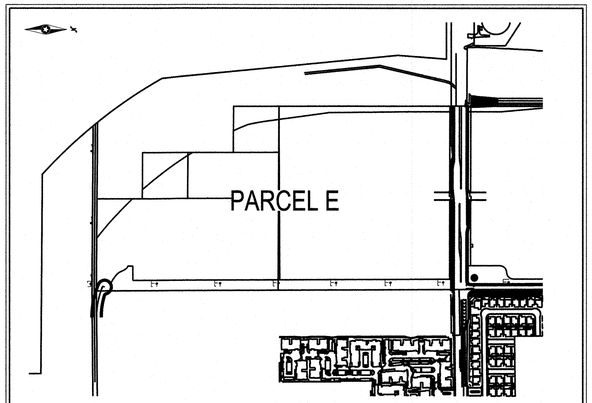
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190 OCTANE FT PARTNERS LLC

IMPROVEMENT PLANS FOR PARCEL E MASS GRADING

CITY OF LAS VEGAS, NEVADA
RESIDENTIAL SUBDIVISION
APN: 126-26-000-003



SITE MAP
NOT TO SCALE

SHEET INDEX

NO.	SHEET	TITLE
1	C-1	COVER SHEET
2	C-2	STANDARD NOTES
3	C-3	LEGEND, ABBREVIATIONS, & QUANTITIES
4	MG	MASS GRADING PLAN
5	G-1	GRADING SHEET I
6	G-2	GRADING SHEET II
7	G-3	GRADING SHEET III
8	G-4	GRADING SHEET IV
9	G-5	GRADING SHEET V
10	D-1	GRADING SECTIONS

APPROVALS

CITY OF LAS VEGAS ENGINEER APPROVAL

LAS VEGAS FIRE AND RESCUE DATE

CITY OF LAS VEGAS PLANNING DEPARTMENT

CENTRAL TELEPHONE CO. DBA CENTURYLINK DATE

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

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES
PROJECT NO. ###### FIRST APPROVED DATE: -
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL
MAXIMUM AVAILABLE FIRE SPRINKLER FLOW 20 GPM
SHEETS: ADD FIELD

NV ENERGY 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.

SOUTHWEST GAS CORPORATION DATE

COX COMMUNICATIONS LAS VEGAS, INC. DATE

OWNER/DEVELOPER
190 OCTANE, LLC
c/o OLYMPIA COMPANIES, LLC
11411 SOUTHERN HIGHLANDS
PARKWAY, SUITE 300
LAS VEGAS, NV 89118
PH: (702) 220-6565
FX: (702) 220-6566

ENGINEER
WESTWOOD PROFESSIONAL SEVICES, INC.
5740 S. ARVILLE STREET, SUITE 216
LAS VEGAS, NV 89118
PH: (702) 284-5300
FX: (702) 284-5399
CONTACT: JOSH JOHNSON

LEGAL DESCRIPTION

PARCELS E1 & E2 OF PARENT FINAL MAP OF BLM 270 AS SHOWN BY MAP THEREOF ON FILE IN BOOK 162 OF PLATS, PAGE 55, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

BENCHMARK

BENCHMARK NUMBER: 6LV9913W4

RIVET AND PLATE ON TOP OF CURB AT THE NORTHEAST CORNER OF FARM ROAD AND MAINWAL BLVD.

ELEVATION = 3054.93 FEET, 931.43 METERS
N.A.V.D. 88 DATUM

PER THE CITY OF LAS VEGAS VERTICAL CONTROL WEBSITE

FEMA FLOOD ZONE INFORMATION

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE 'X' (AREA OUTSIDE THE 500 YEAR FLOODPLAIN), PER THE FEMA FIRM PANELS 32003C1750E DATED SEPTEMBER 27, 2002

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 ZONE

DATUM (REFERENCE FRAME): NAD 1983(2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

PROJECTION: TRAVERSE 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.

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

SWPPP NOTE

NOTE: ALL LAND SURFACE AREA DISTURBANCES OVER 1 ACRE REQUIRE A STORMWATER DISCHARGE PERMIT ISSUED BY THE NEVADA DIVISION OF ENVIRONMENTAL PROTECTION (NDEP). A PHASED CONSTRUCTION UNIT IN A CONTIGUOUS SUBDIVISION IS CONSIDERED UNDER CONSTRUCTION UNTIL ALL STRIPPED SURFACE AREAS HAVE BEEN COVERED BY PAVING, BUILDING CONSTRUCTION OR PLANTING. A STORMWATER DISCHARGE PERMIT APPLICATION AND ASSOCIATED INFORMATION MAY BE DOWNLOADED FROM THE WEB SITE: HTTP://WWW.STATE.NV.US/SHPC/STORM01.HTM PROJECTS THAT DISTURB MORE THAN ONE ACRE OF LAND MUST SUBMIT TO NDEP A "NOTICE OF INTENT" FOR INCLUSION UNDER STORMWATER PERMIT NO. NVR100000 ALONG WITH THE APPROPRIATE FILLING FEE.

PROJECT INFORMATION

ACREAGE (NET): = 61.42 AC

EARTHWORK SUMMARY (UNADJUSTED)

CUT	198,305 CY.
FILL	48,730 CY.
NET	149,575 CY.

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 & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811 OR
1-800-227-2600

Westwood
Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE
1				

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E
COVER SHEET

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ

PROJECT NO.
OLY2007-000

NEVADA PROFESSIONAL ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
Exp. 06/30/2021
CIVIL
NO. 15789
7/23/20

C-1
SHEET 1 OF 10

J:\Olv2007-000 blm 270 - parcel e\dwg\temprov\olv2007-000 cvr.dwg 7/23/2020 11:10 AM Joey Portello

STORMWATER RUNOFF MANAGEMENT

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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 CLARK COUNTY 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 TITLE 24.40 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.

LEGAL DESCRIPTION

PARCELS E1 & E2 OF PARENT FINAL MAP OF BLM 270 AS SHOWN BY MAP THEREOF ON FILE IN BOOK 162 OF PLATS, PAGE 55, IN THE OFFICE OF THE COUNTY RECORDER OF CLARK COUNTY, NEVADA.

BENCHMARK

BENCHMARK NUMBER: 6LV991.3W4

RIVET AND PLATE ON TOP OF CURB AT THE NORTHEAST CORNER OF FARM ROAD AND MAINWAL BLVD.

ELEVATION = 3054.93 FEET, 931.43 METERS
N.A.V.D. 88 DATUM

PER THE CITY OF LAS VEGAS VERTICAL CONTROL WEBSITE

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 ZONE

DATUM (REFERENCE FRAME): NAD 1983(2011) EPOCH 2010.00

SYSTEM: NEVADA COORDINATE REFERENCE SYSTEM (NCRS)

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

SOUTHERN NEVADA - SOUTHWEST GAS CORPORATION GENERAL NOTES

1. IN THE EVENT OF NATURAL GAS EMERGENCIES CALL 911 AND 1-877-860-6020
2. MINIMUM HORIZONTAL AND VERTICAL CLEARANCES BETWEEN NATURAL GAS FACILITIES AND ANY UNDERGROUND UTILITIES AND/OR STRUCTURES, INCLUDING BUT NOT LIMITED TO WATER, SEWER, STORM DRAIN, COMMUNICATIONS, AND ELECTRICAL SHALL BE AT LEAST 12-INCHES OR GREATER AS DICTATED BY LOCAL CODES AND STANDARDS.
   A) ANY DEVIATION FROM SPECIFIED MINIMUM CLEARANCES MUST BE APPROVED BY ALL AFFECTED UTILITIES AND/OR MUNICIPALITIES
3. FOR VALVE ADJUSTMENT CONTACT 702-528-7881 14 DAYS PRIOR TO CONSTRUCTION.
4. IN THE EVENT OF NATURAL GAS CONFLICT WITH PROPOSED UTILITIES AND STRUCTURES CONTACT 702-365-2099
5. SOUTHWEST GAS STANDBY CONTACT NUMBER (702)-278-8451

SOUTHWEST GAS APPROVAL

SOUTHWEST GAS CORPORATION 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.

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECT # ADD FIELD (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 REUSED.

GRADING NOTES

1. INDICATED GRADES OTHER THAN T.C., F.G. & GUTTER F.L. ARE ROUGH GRADES.
2. THE ROUGH GRADING PLANS SHALL BE ON THE JOB SITE AT ALL TIMES. THE ROUGH GRADING SHALL BE FINISHED IN CONFORMANCE WITH THE LINES AND GRADES SHOWN ON THE PLANS. THE GRADING QUANTITIES ARE BASED ON THE ELEVATION AND DETAILS SHOWN ON THE PLANS. ANY DEVIATIONS FROM THE PLANS WILL RESULT IN QUANTITY CHANGES.
3. CARE SHALL BE EXERCISED IN GRADING CORNER LOTS.
4. ROUGH PAD ELEVATIONS SHALL BE GRADED TO WITHIN 0.1' OF THE PAD ELEVATIONS SHOWN ON THE PLANS. WHEN GRADING IS COMPLETE PER THE PLANS, THE CONTRACTOR SHALL NOTIFY THE ENGINEER SO THAT THE LOTS CAN BE INSPECTED. AT THAT TIME THE ENGINEER SHALL ALSO DECIDE IF ANY ADDITIONAL DITCHES OR BERMS ARE REQUIRED. THE CONTRACTOR IS REQUESTED NOT TO REMOVE ANY OF HIS ROUGH GRADING EQUIPMENT UNTIL HE RECEIVES GRADING APPROVAL FROM THE ENGINEER.
5. SOILS REPORT PREPARED BY SOUTHWEST GEOTECHNICAL, PROJECT NO. 197111, DATED 01/28/2020.
6. EARTHWORK QUANTITIES (RAW):
   -CUT = 198,305 CUBIC YARDS.
   -FILL = 48,730 CUBIC YARDS

   A) THE ABOVE QUANTITIES DO NOT REFLECT LOSSES DUE TO SUBSIDENCE OR SHRINKAGE.
   B) THE ABOVE QUANTITIES DO REFLECT USING NATIVE MATERIAL IN LIEU OF TYPE I GRAVEL BASE MATERIAL FOR STREET SECTIONS.
   C) THE ABOVE QUANTITIES DO NOT REFLECT ANY EARTHWORK WHICH MAY BE REQUIRED BY THE ENGINEER TO CONSTRUCT ADDITIONAL PROTECTIVE DITCHES OR BERMS NOT SHOWN ON THESE DRAWINGS.

CITY OF LAS VEGAS FIRE AND RESCUE GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE # 6631 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. ONLY FIRE HYDRANTS THAT ARE ON THE LAS VEGAS VALLEY WATER DISTRICT'S - APPROVED PRODUCTS LIST ARE ALLOWED TO BE INSTALLED.
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. IFC § 105.6.15
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. IFC § 3310, § 3312
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. IFC § 507.5.7.3
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. IFC § 106.3
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. IFC § 507.2.1, NFPA 24
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. IFC § 507
9. PRIVATE HYDRANTS SHALL BE PAINTED RED. IFC § 507.5.7.1
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. IFC § 507
11. FIRE HYDRANT SPACING SHALL BE AS FOLLOWS: IFC § C102
    - RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
    - COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHERE THE WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM OF 1000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FT ON AN ALTERNATING BASIS. IFC § C102.8
13. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN THE RADIUS OF A CUL-DE-SAC OR WITHIN 20 FT OF THE PERIMETER OF THE RADIUS OF THE CUL-DE-SAC.
14. NO FIRE HYDRANTS SHALL BE LOCATED WITHIN 6 FT OF ANY CURB RETURN, DRIVEWAY, POWER POLE, STREETLIGHT OR ANY OTHER OBSTRUCTION. IFC § C102.10
15. A MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A ONE-TWO FAMILY DWELLING SHALL NOT EXCEED 300 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.4
16. THE MAXIMUM DISTANCE FROM A FIRE HYDRANT TO A FIRE DEPARTMENT CONNECTION (FDC) SHALL NOT EXCEED 100 FT, AS MEASURED BY AN APPROVED ROUTE. IFC § C102.7
17. THE MAXIMUM DISTANCE FROM A HYDRANT TO THE END OF A DEAD-END STREET SHALL NOT EXCEED 200 FT. IFC § C102.6
18. TWO (2) SOURCES OF SUPPLY ARE REQUIRED WHENEVER THERE IS 4 OR MORE FIRE HYDRANTS/SPRINKLER LEAD-INS ARE INSTALLED ON A SINGLE SYSTEM. FOR SYSTEMS REQUIRED TO HAVE TWO (2) SOURCES OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 2 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. FOR SYSTEMS PERMITTED TO HAVE ONE SOURCE OF WATER SUPPLY, SECTIONAL CONTROL VALVES SHALL BE INSTALLED SO THAT NO MORE THAN 3 FIRE HYDRANTS AND/OR FIRE SPRINKLER LEAD-INS CAN BE OUT OF SERVICE DUE TO A SERVICE INTERRUPTION. IFC § C104
19. ALL FIRE APPARATUS ACCESS ROADS SHALL BE PAVED TO PROVIDE ALL-WEATHER DRIVING CAPABILITIES, AND SHALL BE DESIGNED AND MAINTAINED TO SUPPORT THE IMPOSED LOADS OF THE FIRE APPARATUS. IFC § 503.2.3
20. THE GRADIENT FOR THE FIRE APPARATUS ACCESS ROADS SHALL NOT EXCEED 12% ANGLES OF APPROACH AND ANGLES OF DEPARTURE SHALL NOT EXCEED 6% FOR 25 FT PRIOR TO OR AFTER THE GRADE CHANGE. ADJACENT FIRE APPARATUS ACCESS GRADIENT SHALL NOT EXCEED 6%. IFC § 503.2.7, § 503.2.8
21. THE TURNING RADIUS OF THE FIRE APPARATUS ACCESS ROADS SHALL BE NO LESS THAN 52 FT OUTSIDE AND 28 FT INSIDE TURNING RADIUS. IFC § 503.2.4
22. VERTICAL CLEARANCE OF ALL FIRE APPARATUS ACCESS ROADS SHALL NOT BE LESS THAN 13FT 6 INS. IFC § 503.2.1
23. FIRE DEPARTMENT ACCESS ROADS SHALL HAVE A MINIMUM UNOBSTRUCTED WIDTH OF NOT LESS THAN 33 FT WITH PARKING ON BOTH SIDES MEASURED TO FACE OF CURB. NOT LESS THAN 28 FT WIDE WITH PARKING RESTRICTED TO ONE SIDE MEASURED TO FACE OF CURB. NOT LESS THAN 24 FT WIDE WITH NO PARKING ON EITHER SIDE MEASURED TO FACE OF CURB. FIRE LANES THROUGH PARKING LOTS SHALL BE NOT LESS THAN 24 FT. IFC § 503.2.1.1
24. A FIRE APPARATUS ACCESS ROAD SHALL BE REQUIRED WHEN ANY PORTION OF AN EXTERIOR WALL OF THE FIRST STORY IS LOCATED MORE THAN 150 FT FROM A FIRE DEPARTMENT VEHICLE ACCESS. IFC § 503.1.1
25. APPROVED SECONDARY FIRE APPARATUS ACCESS SHALL BE PROVIDED FOR 200 OR MORE DWELLING UNITS. ROAD(S) WITH DEAD- ENDS OR A SINGLE POINT OF ACCESS IN EXCESS OF 600 FT. CLV REGULATION AND MOU
26. ALL DEAD-END FIRE APPARATUS ROADS AND/OR FIRE LANES, PUBLIC OR PRIVATE, IN EXCESS OF 150 FT IN LENGTH SHALL BE PROVIDED WITH AN APPROVED TURN AROUND HAVING A MINIMUM DIAMETER OF 81 FT. CLV REGULATION
27. ALL FIRE APPARATUS ACCESS ROADS SHALL BE MARKED BY PLACING APPROVED SIGNS AT THE START OF THE DESIGNATED FIRE LANE, ONE SIGN AT THE END OF THE FIRE LANE AND WITH SIGNS AT INTERVALS OF 100 FT ALONG THE DESIGNATED FIRE LANES. SIGNS TO BE PLACED ON BOTH SIDES OF AN ACCESS ROADWAY IF NEEDED TO PREVENT PARKING ON EITHER SIDE. SIGNS TO BE INSTALLED NO HIGHER THAN 10 FT OR LESS THAN 6 FT FROM THE ROADWAY LEVEL. THE CURB ALONG OR ON THE PAVEMENT OR CEMENT OF FIRE LANES IS PROVIDED) SHALL BE PAINTED WITH A RED WEATHER RESISTANT PAINT IN ADDITION TO THE SIGNS. IFC § 503.3
28. ELECTRICALLY CONTROLLED ACCESS GATES SHALL BE PROVIDED WITH AN APPROVED EMERGENCY VEHICLE DETECTOR/RECEIVER SYSTEM. IFC § 503.6
29. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS, OR HAVING FOUR OR MORE TRAVEL LANES AND A TRAFFIC COUNT OF MORE THAN 30,000 VEHICLES PER DAY, ALL HYDRANTS BEING UTILIZED TO DELIVER FIRE FLOW TO THE PROPOSED LOCATION SHALL BE LOCATED ON THE SAME SIDE OF THE STREET AS THE PROPOSED DEVELOPMENT. CLV REGULATION

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.

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, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY ENGINEER. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

UTILITY LOCATION NOTE TO CONTRACTOR

EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS. CALL BEFORE YOU DIG: 1 (800) 227-2600; SOUTHWEST GAS CORPORATION: 702-400-1789 (STANDBY CONTACT NUMBER)

CITY OF LAS VEGAS GENERAL NOTES

1. ALL CONSTRUCTION AND MATERIALS SHALL BE IN ACCORDANCE WITH THE "UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFF-SITE IMPROVEMENTS, CLARK COUNTY AREA NEVADA", LATEST ISSUE; THE "UNIFORM STANDARD DRAWINGS FOR PUBLIC WORKS CONSTRUCTION, CLARK COUNTY AREA NEVADA", LATEST REVISED EDITION; THE "SUMMERLIN IMPROVEMENT STANDARDS" FOR WORK IN THE SUMMERLIN AREA; AND OTHER APPLICABLE APPROVED STANDARDS ISSUED BY THE CONTROLLING AGENCY; THE UNIFORM BUILDING CODE; AND ALL LOCAL CITY CODES AND ORDINANCES APPLICABLE, EXCEPT AS NOTED ON THIS SHEET AS "DEVIATIONS FROM STANDARDS".
2. THE EXISTENCE AND LOCATION OF ANY OVERHEAD OR UNDERGROUND UTILITY LINES, PIPES, OR STRUCTURES SHOWN ON THESE PLANS ARE OBTAINED BY A RESEARCH OF THE AVAILABLE RECORDS. EXISTING UTILITIES AS SHOWN FROM CLV PLANS LIBRARY ARE APPROXIMATE AND FOR RECORD PURPOSES. EXISTING UTILITIES ARE LOCATED ON PLANS ONLY FOR THE CONVENIENCE OF THE CONTRACTOR. EXISTING UTILITY SERVICE LATERALS MAY NOT BE SHOWN ON THE PLANS. THE CONTRACTOR SHALL, AT HIS OWN EXPENSE, LOCATE ALL UNDERGROUND AND OVERHEAD INTERFERENCE'S WHICH MAY AFFECT HIS OPERATION DURING CONSTRUCTION AND SHALL TAKE ALL NECESSARY PRECAUTIONS TO AVOID DAMAGE TO SAME. THE CONTRACTOR SHALL USE EXTREME CAUTION WHEN WORKING NEAR OVERHEAD UTILITIES SO AS TO SAFELY PROTECT ALL PERSONNEL AND EQUIPMENT, AND SHALL BE RESPONSIBLE FOR ALL COST AND LIABILITY IN CONNECTION THEREWITH.
3. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONARY MEASURES NECESSARY TO PROTECT EXISTING UTILITY LINES, STRUCTURES AND STREET IMPROVEMENTS WHICH ARE TO REMAIN IN PLACE, FROM DAMAGE, AND ALL SUCH IMPROVEMENTS OR STRUCTURES DAMAGED BY THE CONTRACTOR'S OPERATIONS SHALL BE REPAIRED OR REPLACED SATISFACTORY TO THE ENGINEER AND THE OWNING UTILITY COMPANY AT THE EXPENSE OF THE CONTRACTOR.
4. ALL CONSTRUCTION SHALL BE AS SHOWN ON THESE PLANS, ANY REVISIONS SHALL HAVE THE PRIOR WRITTEN APPROVAL OF THE CITY ENGINEER.
5. TYPE V CEMENT SHALL BE USED IN ALL OFF-SITE CONCRETE WORK. CONCRETE TO BE 3000 P.S.I. MINIMUM @ 28 DAYS. MIX DESIGNS TO BE APPROVED BY THE CITY, PRIOR TO THE USE ON THE PROJECT.
6. PERMITS ARE REQUIRED FOR ANY WORK IN THE PUBLIC RIGHT-OF-WAY. THE CONTRACTOR SHALL SECURE ALL PERMITS AND INSPECTIONS REQUIRED FOR THIS CONSTRUCTION.
7. EXPANSION JOINTS REQUIRED, MAXIMU

ABBREVIATIONS

AC	ASPHALTIC CONCRETE OR ACRE
AGG	AGGREGATE BASE
APN	ASSESSORS PARCEL NUMBER
APPROX OR ~	APPROXIMATE
AVE	AVENUE
@	AT
BC	BEGIN CURVE OR BACK OF CURB
BCR	BEGINNING OF CURB RETURN
BHW	BOTTOM OF HEADWALL
BLDG	BUILDING
BLVD	BOULEVARD
BM	BENCHMARK
BVC	BEGIN VERTICAL CURVE
BWV	BACK WATER VALVE
CC	CLARK COUNTY
CCAUSD	CLARK COUNTY AREA UNIFORM STANDARD DRAWINGS
CCPW	CLARK COUNTY PUBLIC WORKS
CCRFCD	CLARK COUNTY REGIONAL FLOOD DISTRICT
CCWRD	CLARK COUNTY WATER RECLAMATION DISTRICT
CE	COMMON ELEMENT
CL/C/L/C	CENTERLINE
CLR	CLEAR OR CLEARANCE
CLSM	CONTROLLED LOW STRENGTH MATERIAL
CLV	CITY OF LAS VEGAS
CML&C	CEMENT MORTAR LINED AND COATED
CMU	CONCRETE MASONRY UNIT
CNLV	CITY OF NORTH LAS VEGAS
COH	CITY OF HENDERSON
CONC	CONCRETE
CT	COURT
CY OR CU YD	CUBIC YARD
DCWCS	DESIGN AND CONSTRUCTION FOR WASTEWATER COLLECTION SYSTEMS
DE	DRAINAGE EASEMENT
DET	DETAIL
DI	DUCTILE IRON OR DRAIN INLET
DIA, ø	DIAMETER
DIP	DUCTILE IRON PIPE
DR	DRIVE
DWG(S)	DRAWING
DWY	DRIVEWAY
EA	EACH
ECR	END CURB RETURN
EG	EXISTING GROUND
ELEV	ELEVATION
ESMT	EASEMENT
EP	EDGE OF PAVEMENT
ERU	EQUIVALENT RESIDENTIAL UNIT
EVC	END VERTICAL CURVE
EX OR EXIST	EXISTING
FC	FACE OF CURB
FF	FINISHED FLOOR
FG	FINISHED GRADE
FGH	FINISHED GRADE, HIGH SIDE
FGL	FINISHED GRADE, LOW SIDE
FH	FIRE HYDRANT
FL	FLOWLINE
FT	FEET OR FOOT
FUT	FUTURE
GRD	GRADE OR GROUND
GB	GRADE BREAK OR GRADE CHANGE
GV	GATE VALVE
HDPE	HIGH DENSITY POLYETHYLENE
HOA	HOME OWNERS ASSOCIATION
HORZ	HORIZONTAL
HP	HIGH POINT
HWL	HIGH WATER LEVEL
HDWL OR HW	HEADWALL
HYD	HYDRAULIC OR HYDRANT
ID	INSIDE DIAMETER
IN	INCH
INT	INTERSECTION
INV	INVERT ELEVATION
IP	IRON PIPE
IRRG	IRRIGATION
LF	LINEAR FEET
LMC	LANDSCAPE MAINTENANCE CORPORATION
LP	LOW POINT
LT OR L	LEFT
LVVWD	LAS VEGAS VALLEY WATER DISTRICT
LWL	LOW WATER LEVEL
MAX	MAXIMUM
MECH	MECHANICAL
MH	MANHOLE
MIN	MINIMUM
MISC	MISCELLANEOUS
MUE	MUNICIPAL UTILITY EASEMENT
NDOT	NEVADA DEPARTMENT OF TRANSPORTATION
NTS	NOT TO SCALE
NUE	NONEXCLUSIVE UTILITY EASEMENT
NVE	NV ENERGY
OC	ON CENTER
OD	OUTSIDE DIAMETER OR OVERALL DIMENSION
OFF	OFFSET
ORIG	ORIGINAL
PAE	PUBLIC OR PEDESTRIAN ACCESS EASEMENT
PB	PULL BOX
PC	POINT OF CURVE
PCC	POINT OF COMPOUND CURVE
PDE	PUBLIC DRAINAGE EASEMENT
℄ OR PL	PROPERTY LINE
POB	POINT OF BEGINNING
POC	POINT OF CURVATURE
POE	POINT OF ENDING
PRC	POINT OF REVERSE CURVATURE
PRELIM	PRELIMINARY
PROP	PROPOSED
PRV	PRESSURE REDUCING VALVE
PUE	PUBLIC UTILITY EASEMENT
PT	POINT OF TANGENT OR POINT
PVC	POLYVINYL CHLORIDE
PVI	POINT OF VERTICAL INTERSECTION
QTY	QUANTITY
R	RADIUS
RCA	REINFORCED CONCRETE ARCH
RCB	REINFORCED CONCRETE BOX
RCP	REINFORCED CONCRETE PIPE
RD	ROAD
RDWY ESMT	ROADWAY EASEMENT
REQD	REQUIRED
REV	REVISION
RG	ROUGH GRADE
RT OR R	RIGHT
RW, ROW	RIGHT OF WAY
S	SLOPE
SCH	SCHEDULE
SD	STORM DRAIN
SDDI	STORM DRAIN DROP INLET
SDMH	STORM DRAIN MANHOLE
SEC	SECTION
SF	SQUARE FEET
SHT	SHEET
SLTC	STREET LIGHT & TRAFFIC CONTROL ESMT
SNWA	SOUTHERN NEVADA WATER AUTHORITY
SPECS	SPECIFICATIONS
ST	STREET
SSMH	SANITARY SEWER MANHOLE
STA	STATION
STD	STANDARD
STL	STEEL
STLT	STREET LIGHT
SW	SIDEWALK
SWG	SOUTHWEST GAS
SWR OR SS	SANITARY SEWER
SY	SQUARE YARD
TAN	TANGENT
TC	TOP OF CURB
TF	TOP OF FLOOR OR TOP OF FOOTING
TG	TOP OF GRATE
THRU	THROUGH
THW	TOP OF HEADWALL
TP	TOP OF PIPE
TW	TOP OF WALL
TRW	TOP OF RETAINING WALL
TSW	TOP OF SCREEN WALL
TYP	TYPICAL
UDACS	UNIFORM DESIGN AND CONSTRUCTION STANDARDS
UE	UTILITY EASEMENT
VC	VERTICAL CURVE
VERT	VERTICAL
VG	VALLEY GUTTER
WI	WROUGHT IRON
WL	WATER LINE
WPZ	WATER PRESSURE ZONE
WT	WEIGHT
WTR	WATER LINE

SPECIAL NOTE

IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED WHICH IS NOT SHOWN ON THESE DRAWINGS, THE OWNER AGREES TO PROVIDE AND INSTALL SUCH ITEM AT HIS OWN EXPENSE AND AT THE DIRECTION OF THE CITY OF LAS VEGAS DEPT. OF PUBLIC WORKS. TEMPORARY CONSTRUCTION ITEMS INCLUDE: PAVEMENT TRANSITIONS, PROTECTIVE DITCHES AND BERMS, ROAD SIGNS AND BARRICADES, ETC.

NOTICE TO CONTRACTOR

-QUANTITIES SHOWN ARE ESTIMATES ONLY AND ARE INTENDED TO ILLUSTRATE SCOPE OF WORK. THE CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFYING THE EXACT QUANTITIES INVOLVED.

-EXISTING UTILITY LOCATIONS SHOWN HEREIN ARE APPROXIMATE ONLY. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO DETERMINE THE EXACT VERTICAL AND HORIZONTAL LOCATION OF ALL EXISTING UNDERGROUND UTILITIES PRIOR TO COMMENCING CONSTRUCTION. NO REPRESENTATION IS MADE THAT ALL EXISTING UTILITIES ARE SHOWN HEREON. THE ENGINEER ASSUMES NO RESPONSIBILITY FOR UTILITIES NOT SHOWN OR UTILITIES NOT SHOWN IN THEIR PROPER LOCATIONS. CALL BEFORE YOU DIG: (800) 227-2600

LEGEND

EXISTING	PROPOSED	DESCRIPTION
(1900)	1900	5' CONTOUR
		1' CONTOUR
		STRIPING
		SEWER MANHOLE
		CURB AND GUTTER
EX 8" PVC SS	8" PVC SS	SANITARY SEWER PIPE AND FLOW ARROW
EX 8" PVC WTR	8" PVC WTR	WATER PIPE
		WATER GATE VALVE
		FIRE HYDRANT
		WATER BLOW-OFF
		WATER LATERAL W/ METER
		SANITARY SEWER LATERAL
		STREETLIGHT
		EDGE OF PAVEMENT
		TRAFFIC SIGN
PAD=XXXX FF = XXXX	PAD=XXXX FF = XXXX	PAD ELEVATION FINISHED FLOOR ELEVATION
(XXXX) TC	(XXXX) TC	ELEVATION
		RETAINING WALL
		STORM DRAIN W/ MANHOLE

	EXISTING GAS GATE VALVE
MH	EXISTING UNKNOWN MANHOLE
GAS	EXISTING GAS, SIZE PER PLAN
	EXISTING POWER POLE
	EXISTING TRAFFIC SIGNAL
	EXISTING WALL
	WATER PIPE FITTING
POC	WATER POINT OF CONNECTION
POC	SEWER POINT OF CONNECTION
	DAYLIGHT LINE
	STREET CENTERLINE
	RIGHT-OF-WAY
	MATCHLINE
	BOUNDARY LINE
	PHASE LINE
℄	PROPERTY LINE
	FLOWLINE
	SAWCUT
FILL CUT	CUT/FILL TRANSITION LINE
	SIDEWALK
	EX STRIPING TO BE OBLITERATED
	GRADE BREAK LINE
ID	REFLECTIVE RAISED PAVEMENT MARKERS
BWV	BACK WATER VALVE
	WROUGHT IRON FENCE
	PONY WALL
	DECORATIVE PERIMETER WALL
	DECORATIVE PERIMETER RETAINING WALL
	PROPOSED CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	EXISTING CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB
	FUTURE CURB AND GUTTER WITH RIGHT-OF-WAY AT BACK OF CURB

	PROPOSED SCARP AREA
	DRIVEWAY
	PROPOSED RIP RAP
	SIGHT VISIBILITY ZONE PER STD DWG NO. 201.2
	HANDICAP RAMP

QUANTITIES

			PRIVATE	PUBLIC
DRAINAGE				
1.	60" TYPE III STORM DRAIN MANHOLE	EA	–	–
2.	5.0' TYPE "CM2" DROP INLET	EA	–	–
3.	10.0' TYPE "CM2" DROP INLET	EA	–	–
4.	12.5' TYPE "CM2" DROP INLET	EA	–	–
5.	20.0' TYPE "CM2" DROP INLET	EA	–	–
6.	18" RCP CLASS IV STORM DRAIN	LF	–	–
7.	24" RCP CLASS IV STORM DRAIN	LF	–	–
8.	30" RCP CLASS IV STORM DRAIN	LF	–	–
9.	36" RCP CLASS IV STORM DRAIN	LF	–	–
10.	RIPRAP D50=8", THK=16"	SF	–	–
11.	8' WIDE CONCRETE VALLEY GUTTER W/10" TYPE I AGGREGATE BASE	SF	–	–
12.	SIDEWALK UNDER DRAIN	SF	–	–
13.				
SEWER SYSTEM				
1.	4" PVC SEWER LATERAL (PRIVATE)	LF	–	–
2.	8" PVC SEWER PIPE (PUBLIC)	LF	–	–
3.	STANDARD 48" SEWER MANHOLE (PUBLIC)	EA	–	–
4.	8" SEWER PIPE CAP	EA	–	–
5.	BACK WATER VALVE	EA	–	–
6.	8" C-900 WATER QUALITY SEWER PIPE (PUBLIC)	EA	–	–
7.				
WATER SYSTEM				
1.	FIRE HYDRANT ASSEMBLY W/6" GATE VALVE PER UDACS PLATE NO. 40	EA	–	–
2.	6" PVC WATER PIPE (CLASS 150)	LF	–	–
3.	8" PVC WATER PIPE (CLASS 150)	LF	–	–
4.	8" DIP WATER PIPE (CLASS 53)	LF	–	–
5.	8" GATE VALVE WITH VALVE BOX PER UDACS PLATE NO. 30 & 39	EA	–	–
6.	8" X 6" TEE PER UDACS PLATE NO. 31	EA	–	–
7.	8" X 8" TEE PER UDACS PLATE NO. 31	EA	–	–
8.	8" 5 DEGREE BEND WITH RESTRAINED JOINTS	EA	–	–
9.	8" 11.25 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
10.	8" 22.5 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
11.	8" 45 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
12.	8" 90 DEGREE BEND PER UDACS PLATE NO. 31	EA	–	–
13.	CAP AND 2" BLOW-OFF ASSEMBLY W/CAP PER UDACS PLATE NO. 36	EA	–	–
14.	1" COPPER SERVICE W/ 3/4" METER PER UDACS PLATE NO. 2	EA	–	–
15.	1" COPPER SERVICE W/ 1" METER PER UDACS PLATE NO. 4	EA	–	–
16.	1" COPPER SERVICE W/ 3/4" METER & 1" RPPA PER UDACS PLATE NO. 4 & 8	EA	–	–
		EA	–	
STREET IMPROVEMENTS				
1.	2" A.C. PAVEMENT W/ 4" TYPE II OVER 6" TYPE I AGGREGATE BASE	SY	–	–
2.	STANDARD 18" TYPE "L" ISLAND CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
3.	STANDARD 8" TYPE "A" ISLAND CURB W/6" TYPE I AGGREGATE BASE	LF	–	–
4.	STANDARD 30" TYPE "ROLL" CURB & GUTTER W/6" TYPE I AGGREGATE BASE	LF	–	–
5.	4' WIDE CONCRETE SIDEWALK W/4" TYPE II AGGREGATE BASE	SF	–	–
6.				–
7.				
TRAFFIC SIGNALS				
1.	30" STOP SIGN WITH POST (R1-1)	EA	–	–
2.	9" STREET NAME SIGN (D-3, BROWN W/ WHITE LETTERS)(6 POLES x 2 PER POLE=12)	EA	–	–
3.	BLUE COLORED REFLECTIVE RAISED PAVEMENT MARKER	EA	–	–
4.	CROSSWALK MARKINGS	LF	–	–
5.				
6.				
7.				
8.				
DRY UTILITIES				
1.	100W H.P.S. LUMINAIRE STREET LIGHT W/DECORATIVE POLE	EA	–	–
2.	1-1/4" PVC STREET LIGHT CONDUIT WITH (2) #4 AND (1) #8 CONDUCTORS	LF	–	–
3.	NO. 3-1/2 PULL BOX W/METAL COVER	EA	–	–
4.	150 AMP SERVICE PEDESTAL (IRR)	EA	–	–
5.	200 AMP SERVICE PEDESTAL (STLT)	EA	–	–
6.				

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT PLANNING AND ENGINEERING SERVICES

PROJECT NO. ____ ADD FIELD ____ FIRST APPROVED DATE: ____







Westwood
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
Phone (702) 284-5300
Fax (702) 284-5399
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
1					

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E

LEGEND, ABBREVIATIONS, & QUANTITIES

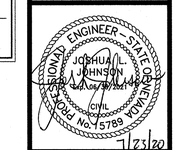
DATE: 07/17/20

DRAFTER: JTP

DESIGNER: JTP

CHECKED: JJ

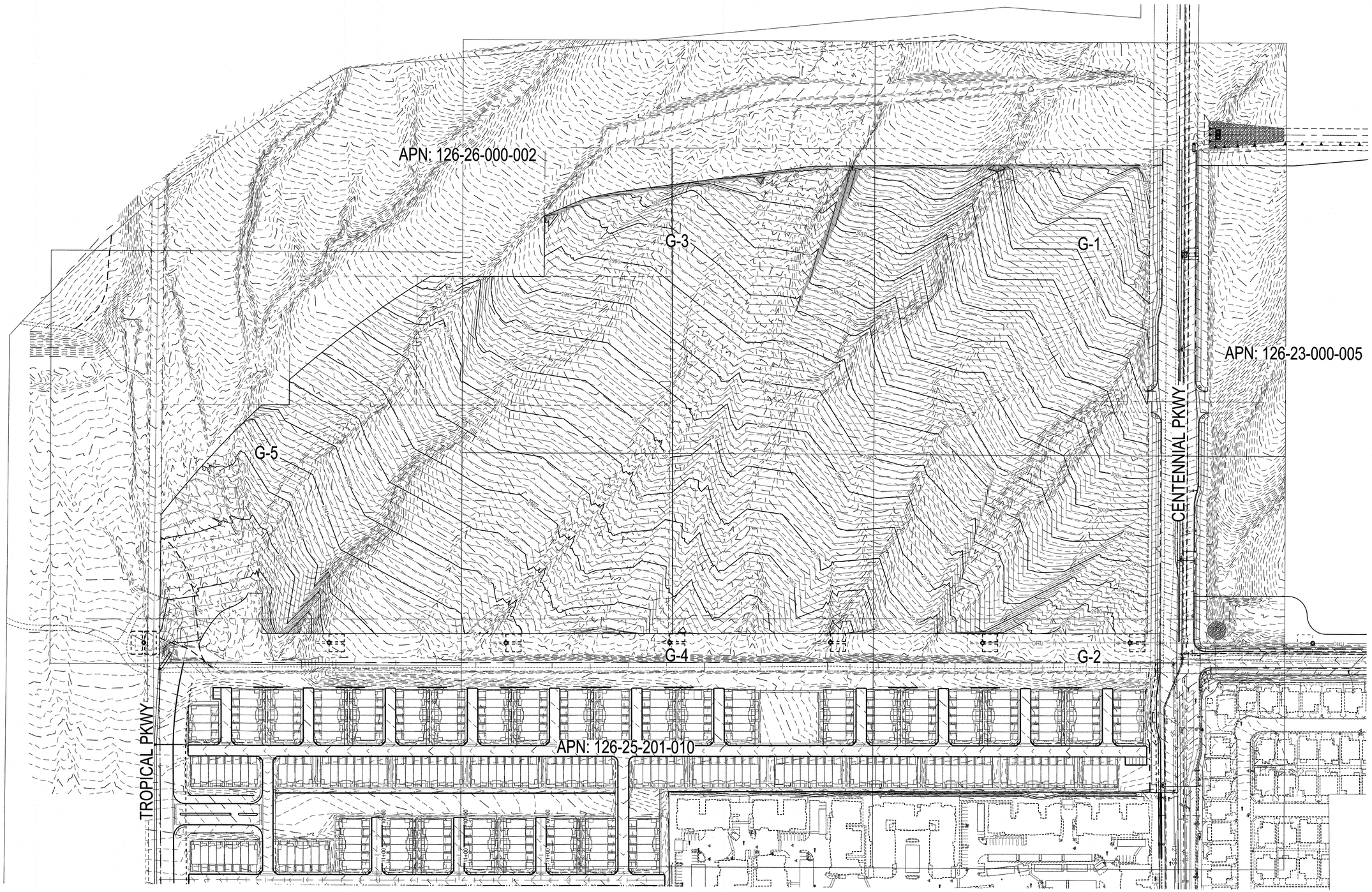
PROJECT NO.
OLY2007-000



C-3

SHEET 3 OF 10

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Westwood

Phone (702) 284-5300
Fax (702) 284-5399

5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com

Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E
MASS GRADING PLAN

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ

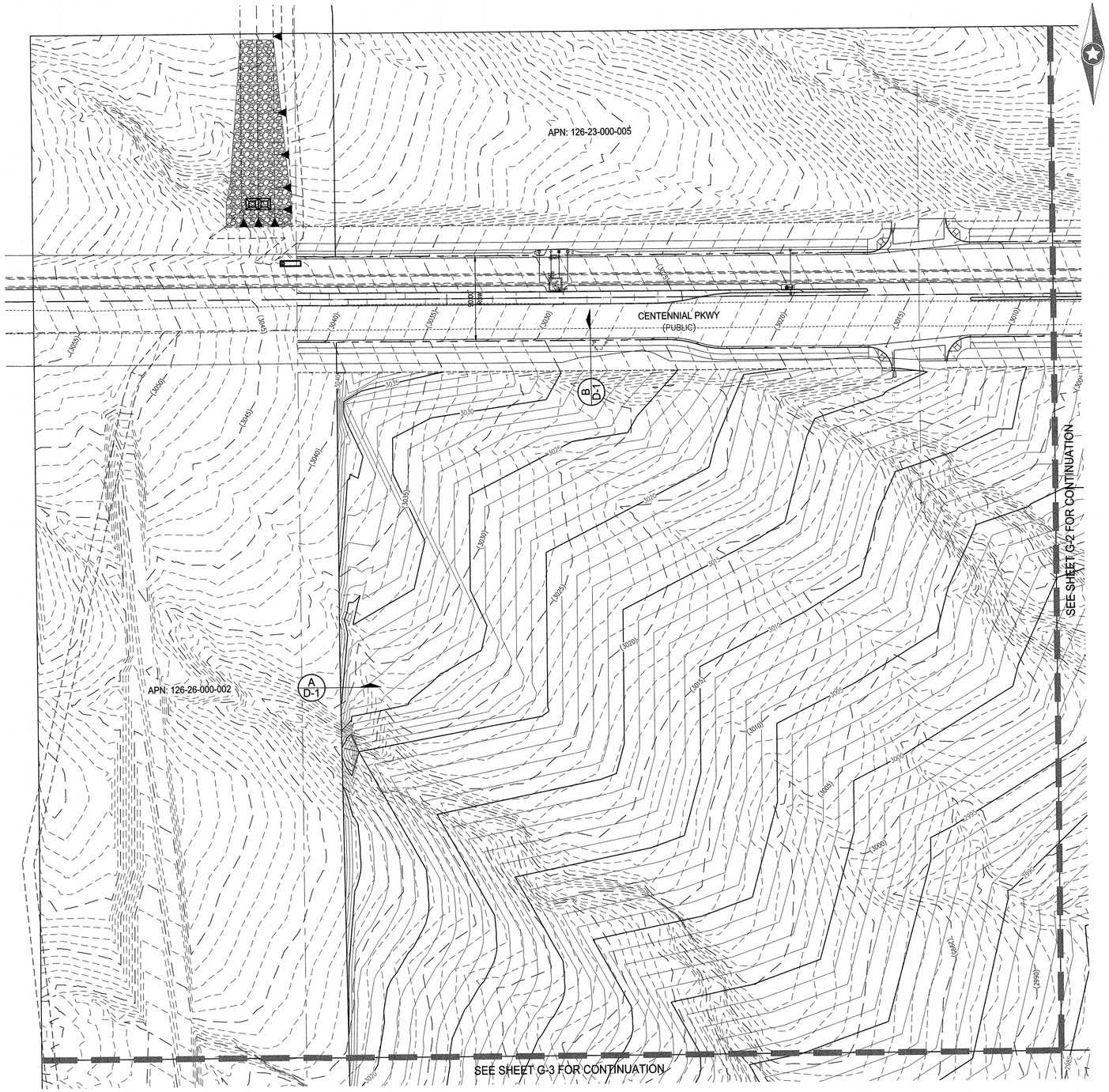
PROJECT NO.
OLY2007-000

PROFESSIONAL ENGINEER STATE OF NEVADA
JOSHUA JOHNSON
Exp. 06/30/2021
No. 15789
CIVIL

7/23/20

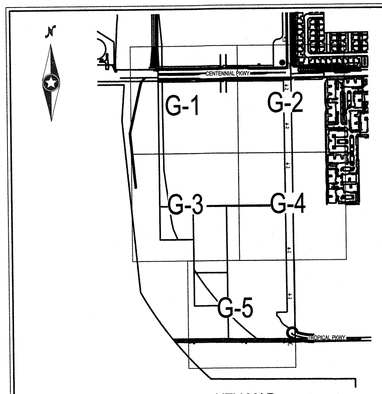
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SHEET 4 OF 10

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SCALE – 1"=30'

0 30 60 FEET



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED LIP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

1. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
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3. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
4. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
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LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDELINES

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

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SOILS REPORT

SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 197111 DATED 01/28/2020

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 198,305 CU YDS
FILL= 48,730 CU YDS

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JOSH JOHNSON, P.E. #15789 DATE







Westwood
Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
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190 OCTANE FT PARTNERS, LLC

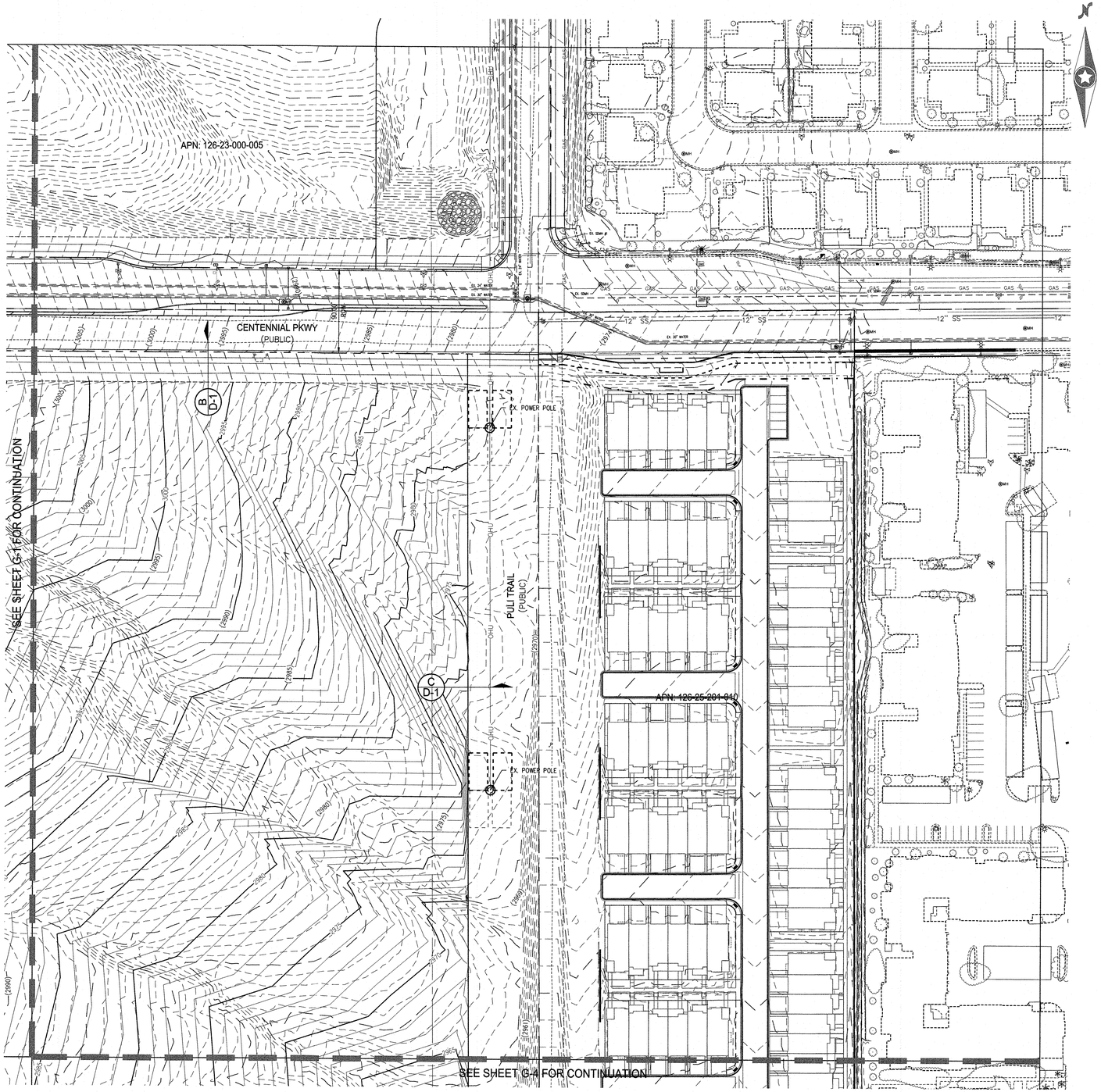
BLM 270 - PARCEL E
GRADING SHEET I

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ
PROJECT NO.
OLY2007-000

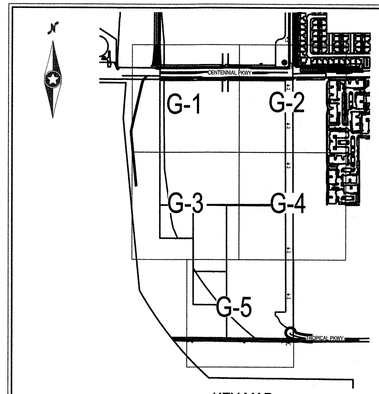
PROFESSIONAL ENGINEER STATE OF NEVADA
JOSHUA L. JOHNSON
CIVIL
No. 15789
7/23/20

G-1
SHEET 5 OF 10

\OLY2007-000 bim 270 - parcel e\data\improv\dr\2007-000 grd.dwg 7/23/2020 11:11 AM Joey Perello



SCALE = 1"=30' (0, 30, 60 FEET)



KEY MAP
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JOSH JOHNSON, P.E. #15789 DATE







Westwood
Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
1					

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E

GRADING SHEET II

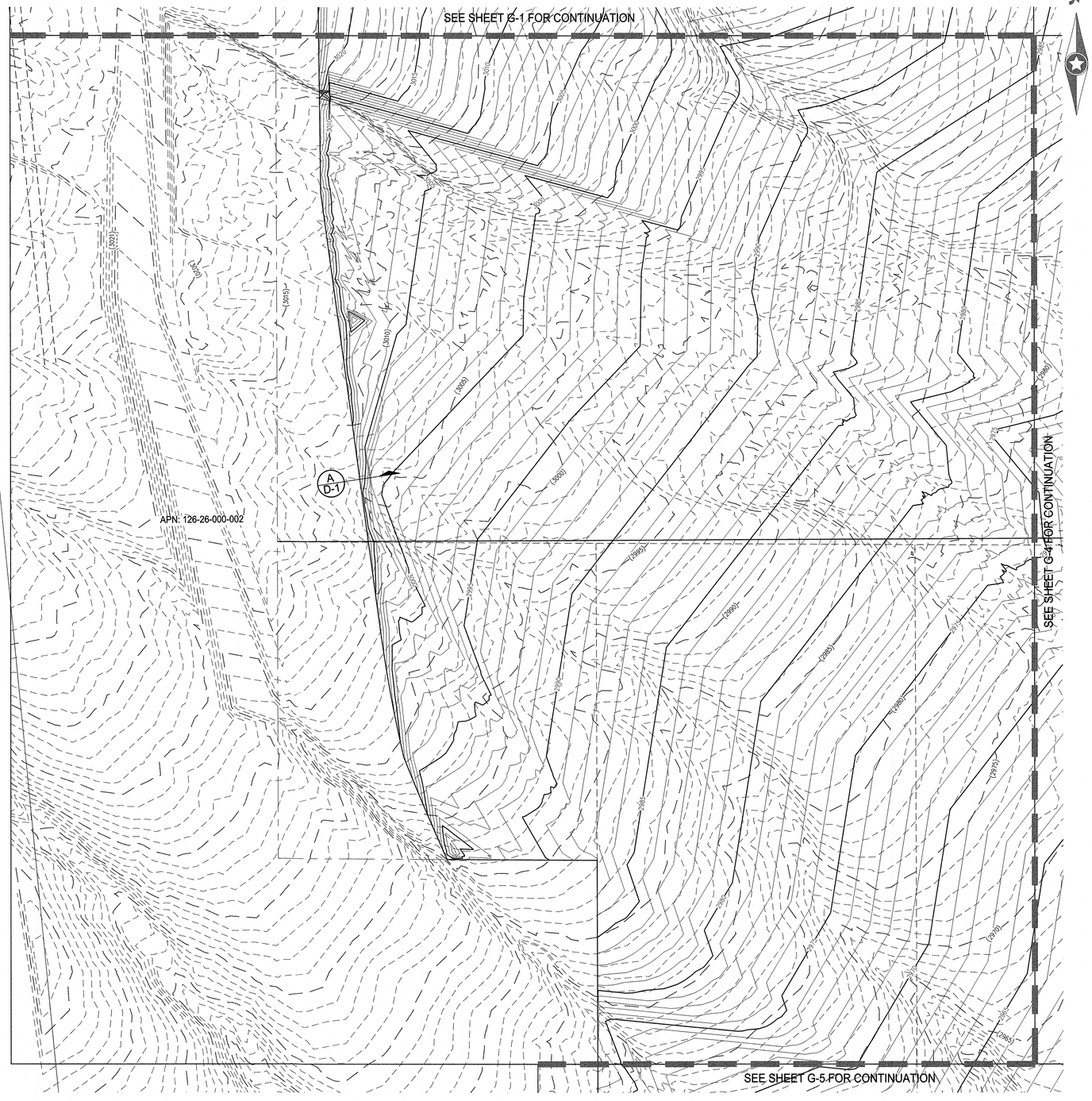
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DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ
PROJECT NO.
OLY2007-000

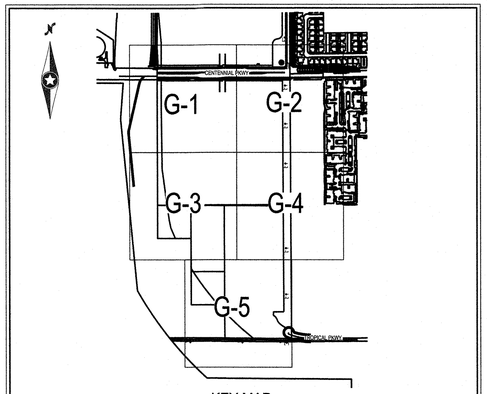
PROFESSIONAL ENGINEER STATE OF NEVADA JOSHUA L. JOHNSON No. 15789 CIVIL 7/23/20

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SHEET 6 OF 10

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SCALE – 1"=30' (0 / 30 / 60 FEET)





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SOILS REPORT

SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 197111 DATED 01/28/2020

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NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E

GRADING SHEET III

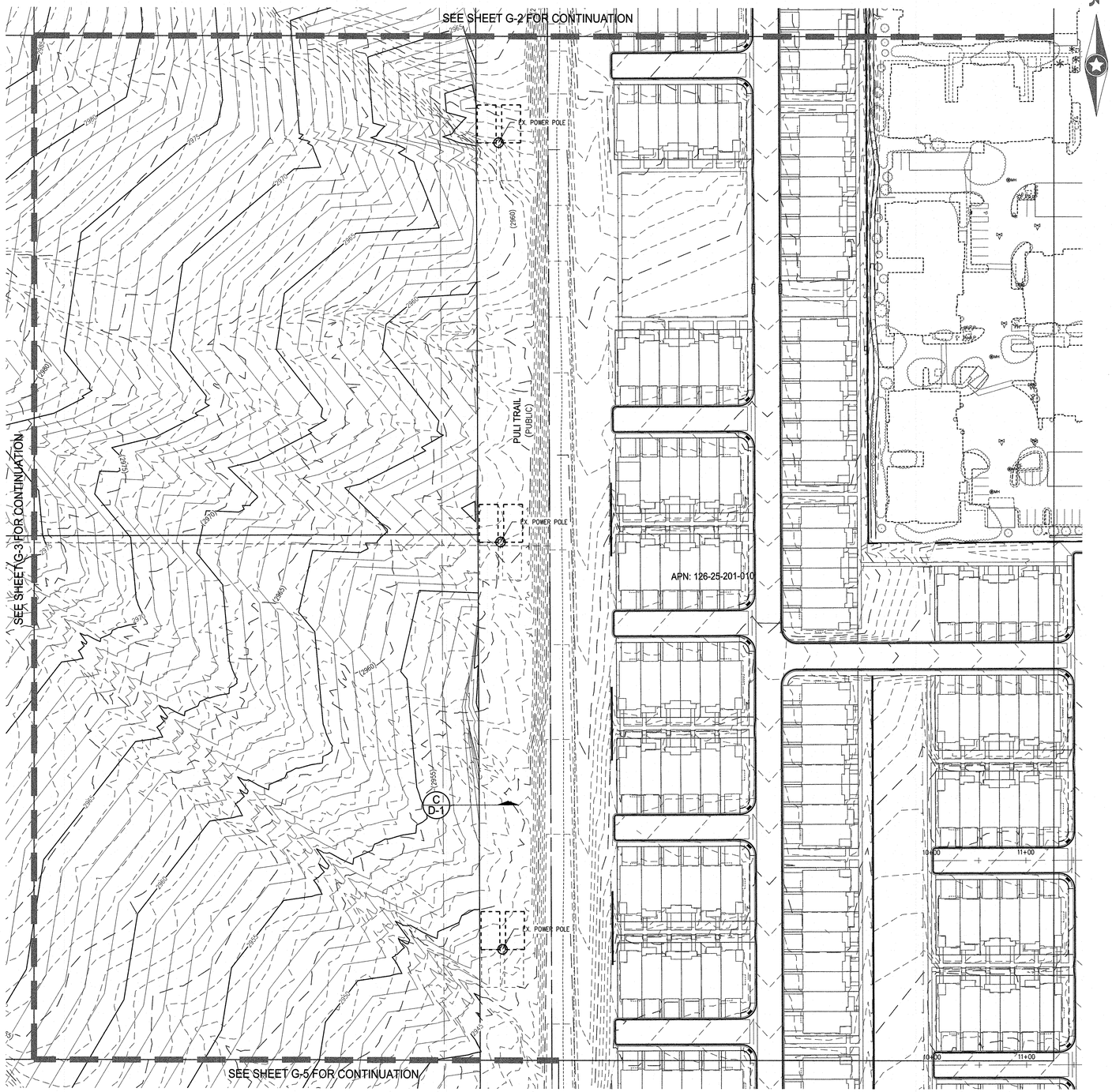
DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ

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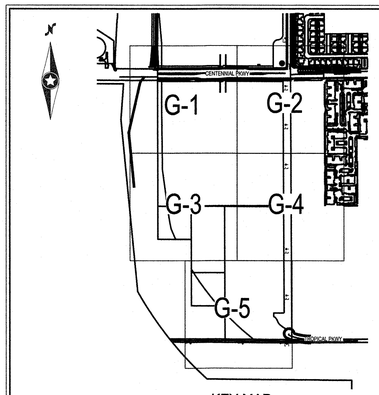
PROFESSIONAL ENGINEER STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15789
CIVIL
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SHEET 7 OF 10

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SCALE – 1"=30' FEET



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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 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 A 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 THE 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.

FLOOD ZONE

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C1750E, DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

FLOOD CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY ??????? ON FILE AT CITY OF LAS VEGAS AND COPW NTE #??-????? FOR THE SUBJECT PROJECT.

JOSH JOHNSON, P.E. #15789 DATE

FAST
Call before you UnderGround
1-702-432-5300
FREEWAY & ARTERIAL SYSTEM OF TRANSPORTATION (F.A.S.T.)

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

Call before you Dig
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY.
Call 811
OR
1-800-227-2600

Westwood
Phone (702) 284-5300
Fax (702) 284-5399
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP DATE	APP
1					

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E
GRADING SHEET IV

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ
PROJECT NO.
OLY2007-000

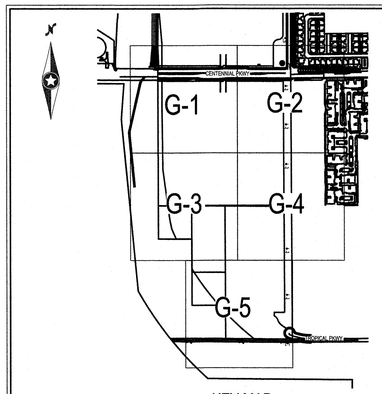
PROFESSIONAL ENGINEER – STATE OF NEVADA
JOSHUA L. JOHNSON
Exp. 06/30/2021
CIVIL
No. 15789
7/23/20

G-4
SHEET 8 OF 10

J:\OLY2007-000 bim 270 - parcel e\civil\improv\OLY2007-000 grd.dwg 7/23/2020 11:12 AM Joey Portelli



0 30 60
SCALE - 1"=30' FEET



KEY MAP
NOT TO SCALE

DISCLAIMER NOTE

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

2) FOR ROADWAY WIDENING AND HALF STREET IMPROVEMENTS THE CONTRACTOR SHALL VERIFY CROSS SLOPES FROM EXISTING PAVEMENT SAWCUT LINE TO PROPOSED EDGE OF PAVEMENT OR PROJECTED UP OF CURB PRIOR TO SUBGRADE PREPARATION AND CONSTRUCTION OF PROPOSED CURB LINE. IF MINIMUM OR MAXIMUM CROSS SLOPES DO NOT MEET AGENCY STANDARDS THE CONTRACTOR SHALL NOTIFY THE ENGINEER.

GRADING NOTES

1. THE CONTRACTOR SHALL VERIFY ALL CONDITIONS AND DIMENSIONS AND REPORT ALL DISCREPANCIES TO THE ENGINEER.
2. ALL IMPROVEMENTS TO BE PROTECTED FROM EROSION BY SWPPP.
3. MAXIMUM/MINIMUM SLOPES AND MINIMUM STREET SECTIONS NOT TO EXCEED THAT SHOWN ON GEOTECH REPORT.
4. SEE DETAIL SHEET FOR STREET SECTIONS AND DETAILS.
5. ALL PUBLIC AND PRIVATE DRAINAGE IMPROVEMENTS TO BE BONDED FOR AND INSPECTED.
6. CONSTRUCTION OF BLOCK WALLS REQUIRES A SEPARATE BUILDING PERMIT AND APPROVAL BY THE CITY OF LAS VEGAS BUILDING DEPARTMENT.
7. CONTRACTOR TO VERIFY LOCATION AND ELEVATION OF EXISTING UTILITY STRUCTURES AND FACILITIES AND NOTIFY ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION. CONTRACTOR TO PROTECT IN PLACE DURING CONSTRUCTION. ENGINEER/OWNER SHALL BE NOTIFIED OF PRIOR DAMAGE TO EXISTING FACILITIES PRIOR TO CONSTRUCTION. CONTRACTOR WILL BE RESPONSIBLE FOR REPAIR/REPLEPING FACILITIES IF ENGINEER/OWNER IS NOT NOTIFIED OF EXISTING DAMAGE PRIOR TO CONSTRUCTION COMMENCING.
8. NO STRUCTURE, VEGETATION, OR OBJECTS OF ANY KIND IS PERMITTED OVER TWENTY-FOUR (24) INCHES IN HEIGHT (MEASURED FROM THE TOP OF THE ADJACENT CURB IF CURB EXIST) WITHIN THE SIGHT VISIBILITY ZONES.

LAS VEGAS VALLEY CONSTRUCTION SITE BMP GUIDELINES

(REQUIRED FOR ALL SITES GREATER THAN 1 ACRE (43,560 SQ.FT.))

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 RIGHTS OF WAY OF CLARK COUNTY 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.
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CALL SOUTHWEST GAS AT 702-651-2111 FOR STANDBY WHEN EXCAVATING OVER OR NEAR HIGH PRESSURE GAS LINES

SURVEY NOTE

OWNER RESPONSIBLE TO PROVIDE SURVEY MONUMENTATION AS SHOWN AND TO REPLACE ALL SURVEY MONUMENTATION DAMAGED, DISTURBED, DESTROYED, OR OBSCURED DURING CONSTRUCTION.

SOILS REPORT

SOILS REPORT BY SOUTHWEST GEOTECHNICAL
PROJECT NO. 197111 DATED 01/28/2020

EARTHWORKS

EARTHWORK QUANTITIES (RAW):
CUT= 198,305 CU YDS
FILL= 48,730 CU YDS

EXPORTED MATERIAL TO BE DISPOSED OF AT AN APPROVED LICENSED DISPOSAL FACILITY OR AT A SITE WITH AN APPROVED AND ACTIVE GRADING PERMIT.

FLOOD ZONE

THE PROJECT SITE IS LOCATED WITHIN A FEMA DESIGNATED ZONE X (UNSHADED) AS DEPICTED ON FLOOD INSURANCE RATE MAP (FIRM) PANEL 32003C1750E, DATED SEPTEMBER 27, 2002. A ZONE X (UNSHADED) IS DESCRIBED AS AN AREA DETERMINED TO BE OUTSIDE THE 0.2% ANNUAL CHANCE FLOOD PLAIN.

FLOOD CERTIFICATION

I CERTIFY THAT THIS GRADING PLAN IS IN CONFORMANCE WITH THE APPROVED TECHNICAL DRAINAGE STUDY ??????? ON FILE AT CITY OF LAS VEGAS AND CCPW HTE #??-????? FOR THE SUBJECT PROJECT.

JOSH JOHNSON, P.E. #15789 DATE







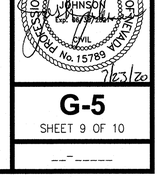
Westwood
5740 S. Arville Street
Suite 216
Las Vegas, NV 89118
Phone (702) 284-5300
Fax (702) 284-5399
westwoodps.com
Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
1					

190 OCTANE FT PARTNERS, LLC

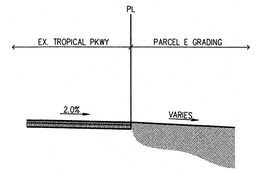
BLM 270 - PARCEL E
GRADING SHEET V

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ
PROJECT NO.
OLY2007-000

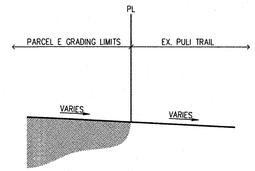


G-5
SHEET 9 OF 10

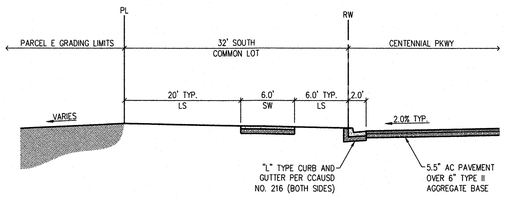
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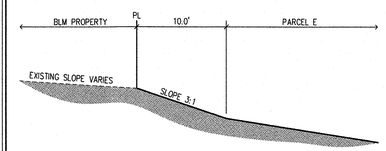
D. SOUTHERN BOUNDARY
NOT TO SCALE



C. EASTERN BOUNDARY
NOT TO SCALE



B. NORTHERN BOUNDARY
NOT TO SCALE



A. WESTWOOD BOUNDARY
NOT TO SCALE

Westwood

Phone (702) 284-5300
Fax (702) 284-5399

5740 S. Arville Street
Suite 216
Las Vegas, NV 89118

westwoodps.com

Westwood Professional Services, Inc.

NO.	DESCRIPTION	DATE	BY	APP. DATE	APP.
1					

190 OCTANE FT PARTNERS, LLC

BLM 270 - PARCEL E
GRADING SECTIONS

DATE: 07/17/20
DRAFTER: JTP
DESIGNER: JTP
CHECKED: JJ

PROJECT NO.
OLY2007-000

NEVADA ENGINEER - STATE OF
JOSHUA J. JOHNSON
No. 15789
PROFESSIONAL ENGINEER
7/23/20

D-1
SHEET 10 OF 10

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