DS #: 4757

APN: 137.33.801.002

PROJECT: SV24 - Crossbridge Drive

SUBMITTAL: 3rd

SCANNED BY/DATE:

CHECKED BY/DATE:

CITY OF LAS VEGAS NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM			DATE: January 16, 2018
TO: **Land Development Services** Department of Building & Safety			FROM: Jennifer Shinn Flood Control Engr. Associate Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin Village 24 – Crossbridge Drive** **Unit 3 Street Improvements (Suncreek to Alta) – Update #1**		**COPIES TO:** GCW Engineers
Cross Streets:	Crossbridge Drive from Suncreek to Alta		Howard Hughes Company
File Number:	F:\Depot\DSMemos\DS4757C.ZNA.doc		Bart Anderson, P.E., DevCo
Parcel Number:	137-33-801-002		
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	10/1/2015	11/4/2015	Not Approved	$400.00	417114: $400
2nd Submittal	2/23/2016 & 3/15/2016	3/16/2016	See Comments Below	$400.00	434039: $400
3rd Submittal	1/8/2018	1/16/2018	See Comments Below	$400.00	492540:$400
			TOTAL FEES (LDDRS):	**$1200.00**	----

REMARKS:

The City of Las Vegas is in receipt of the FEMA approved LOMR, Case No. 17-09-1166P, effective February 5, 2018.

Update #1: Shift drop inlets and storm drain manholes

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

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

1. Verify the scale on all profiles and revise accordingly.
2. Provide details for the culvert headwall, Construction Note 11.

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

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

END OF REMARKS
jks

T/R/S: T20S/R59E/33
AREA K-33

TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 24 CROSSBRIDGE DRIVE UNIT 3 STREET IMPROVEMENTS

62024-223

JANUARY 2018

GCW
ENGINEERS \ SURVEYORS

Prepared For:

Hughes Howard Company, LLC
10801 Charleston Blvd., 3Rd Floor
Las Vegas, Nevada 89146
Phone: (702) 791-4300

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin V. 24 Crossbridge Drive Unit 3 St. Improvements Date: January 2018

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

East/West: Alta Drive

b) Section: 33 Township: 20 S Range: 59 E

c) APN : 137-33-801--002

Name of Owner: Hughes Howard Company, LLC

Telephone No.: (702) 791 - 4300 Fax No.: N/A E-Mail Address: chris.anderson@howardhughes.com

Address: 10801 Charleston Blvd., 3Rd Floor, Las Vegas, Nevada 89146

Contact Person-Name: Steve Jones **Telephone No.:** (702) 804-2130

* **E-Mail Address:** sjones@gcwengineering.com **Fax No.:** (702) 804-2299

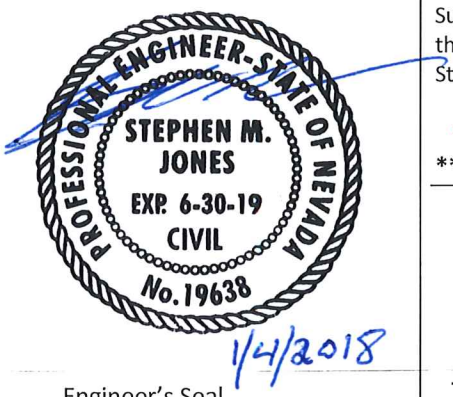
Firm: GCW, Inc.

Address: 1555 South Rainbow Blvd, Las Vegas, Nevada 89146

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 396.57 Ac Being Developed/Disturbed: 10 Ac
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☒ **Yes**** ☐ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ **Yes**** ☐ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Road Improvement
5. Approximate upstream land area which drains to the subject site: +/- 50 Ac
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: Conceptual Drainage Study for Summerlin V. 24 (DS #3505), TDS for V. 24 Unit 2 Improvement (DS #4136), and Summerlin V. 24 Crossbridge Dr. Unit 3 St. Improvements (DS #4757B)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:
   The flow generated by the proposed Crossbridge Drive conveyed by the proposed 66-inch RCP SD
8. Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal

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

***New Required Field**

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

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Summerlin V. 24 Crossbridge Drive Unit 3 St. Improvements	Map ID:
Firm Name: GCW, Inc.	Engineer: Steve Jones
Address: 1555 S. Rainbow Blvd	
City: Las Vegas	State: Nevada Zip: 89146
Phone Number: (702) 804-2130	Fax Number: (702) 804-2299
Property Owner: Hughes Howard Company, LLC	
Address: 10801 Charleston Blvd., 3Rd Floor	
City: Las Vegas	State: Nevada Zip: 89146

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.
	N/A	Design Manual **Standard Form 4**.
	N/A	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	
	N/A	A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
	N/A	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	
_____	N/A	Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.
_____	N/A	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.
_____	N/A	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.
X	_____	Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.
X	_____	Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.
X	_____	Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
X	_____	Proposed typical street sections.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
X		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.
	N/A	Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
	N/A	Concentration points and drainage flow direction with Q100 and V100 and D100 in streets.
	N/A	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.
	N/A	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.
	NA	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.
	N/A	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
	NA	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	
_____	NA	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 Q100 flows.
_____	N/A	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
_____	NA	Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

Yes	No	
_____	N/A	Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
_____	N/A	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.
_____	N/A	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.
_____	N/A	Use of correct precipitation values in and around the McCarran Airport rainfall area.
_____	N/A	A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
_____	N/A	A summary table of stormwater flows showing basin area, Q10 and Q100 for both individual basins and combined basin flows, where applicable.
_____	N/A	Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
_____	N/A	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	
_____	NA	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 Q100 and Q10 flows representing the worst case for interior and all perimeter streets. Q100 d x v < 8. Q10 d x v < 6 and 12 foot dry lane for rights-of-way > 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, Q100 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 Q100 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.
_____	N/A	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

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.)
	N/A	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	
X		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.
X		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.
	N/A	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
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.

TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 24 CROSSBRIDGE DRIVE UNIT 3 STREET IMPROVEMENTS

62024-223

JANUARY 2018

Prepared For:

Hughes Howard Company, LLC
10801 Charleston Blvd., 3Rd Floor
Las Vegas, Nevada 89146
Phone: (702) 791-4300

Prepared By:

GCW, Inc.
1555 S. Rainbow Blvd.
Las Vegas, NV 89146
(702) 804-2000

62024-223

January 8, 2018

Albert Y. Sung, PE
Flood Control Project Manager
City of Las Vegas - Land Development Services
Department of Public Works
333 N. Rancho Drive
Las Vegas, Nevada 89106

Re: Technical Drainage Study for Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements

Dear Mr. Sung:

The purpose of this letter is to serve as the update to the subject project and to accompany an improvement plan revision submittal being made concurrently with this update. The *Technical Drainage Study for Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements* (hereinafter referred to as the Unit 3 Study) prepared by Collins Engineers Inc. was approved by the City of Las Vegas Public Works Department on March 16, 2016 and by the Clark County Regional Flood Control District on April 26, 2016.

Since the approval of Unit 3 Study, field conditions during construction have resulted in drop inlets requiring re-location. According to the survey shots, Drop Inlets (DI) #5 and #6, and manhole (SDMH) #8 are needed to be moved 5 feet to the east due to a conflict with an existing Centurylink vault. In addition, DI #4 is required to move for a better connection into the 60-inch storm drain SDMH #5 instead of an un-constructible connection on the side of the manhole.

The hydraulic calculation report shows that the 100-year flow (Q100) at SDMH #8 is 200 cfs, however, the Q100 at DI #5 and #6 are 9.2 cfs and 6.1 cfs, respectively. Moreover, the Q100 at SDMH #5 is 189.8 cfs, while the Q100 at DI #4 is 5.8 cfs. Although the drop inlets are proposed to be shifted from the approved design, the revision of the storm drain has negligible effects on the hydraulic performance of the storm drain. Therefore, the proposed revision does not pose any negative impacts on downstream facilities or development and is in compliance with the *CCRFCD Hydrologic Criteria and Drainage Design Manual* (Manual).

The plan and profiles have been re-reviewed for completeness and accuracy. Flow rates and HGLs based on previous approved hydraulic models have been labeled and annotated on the plans. Applicable reference material are included in this submittal.

The original approved plans clouded where changes have been made are included in the appendix for reference to the changes. If you have any questions or require additional information, please contact me by medalat@gcwengineering.com.

Cordially,

GCW, INC.

Masih Edalat, PhD, EI
Flood Control Division

ME/me

c: Steve Jones, GCW
Vicki Marjerrison, GCW

1555 South Rainbow Boulevard
Las Vegas, Nevada 89146
O 702.804.2000
F 702.804.2299
info@gcwengineering.com
gcwengineering.com

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: March 16, 2016
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin Village 24 – Crossbridge Drive** **Unit 3 Street Improvements (Suncreek to Alta)**			**COPIES TO:** Collin Engineers, Inc.
Cross Streets:	Crossbridge Drive from Suncreek to Alta			Howard Hughes Company
File Number:	F:\Depot\DSMemos\DS4757B.ZNA.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-33-801-002			CCRFCD
Zoning Action:	N/A			
FEMA Flood Zone	YES	**X**	NO	
Proposed Storm Drain	YES	**X**	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	10/1/2015	11/4/2015	Not Approved	$400.00	417114: $400
2nd Submittal	2/23/2016 & 3/15/2016	3/16/2016	See Comments Below	$400.00	434039: $400
			TOTAL FEES (LDDRS):	**$800.00**	----

REMARKS:

A portion of this site is located in a FEMA Special Flood Hazard Area, Zone A. This project is for roadway infrastructure only. Mapping changes to the Flood Zone are required to be submitted to FEMA with this development.

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. The drainage study shows that a portion of the subject site (intersection of *Alta Drive* and *Crossbridge Drive*) is located in a FEMA designated Special Flood Hazard Area, Zone A. The study shall address the Flood Zone impacts and recommended solution to properly remove the area out of the flood zone through a *Letter of Map Revision* (LOMR) application to FEMA. **Verification of the LOMR submittal to FEMA is required prior to issuance of any permits.**

2. A portion of the FEMA Special Flood Hazard Area, Zone A, is shown within a future development parcel. **No permits of any kind within the development parcel will be issued until the Letter of Map Revision (LOMR) is received from FEMA.**

3. Since the project is within a FEMA Special Flood Hazard Area, Zone A, *Clark County Regional Flood Control District* (CCRFCD) review and approval is required prior to the final approval of the drainage study by the City of Las Vegas.

4. The developer/engineer must also obtain a *Letter of Map Revision* (LOMR) using the approved drainage study as technical support to inform FEMA of the modifications within the flood zone. The bonded improvements shall include a line item of **$50,000.00** for the LOMR. The bonded improvements will not be released until the LOMR is obtained from FEMA and filed with the City of Las Vegas.

5. The subject *Unit 3 Street Improvements of Crossbridge Drive* is a portion of the integral *Crossbridge Drive* (Unit 1 to Unit 3) which base on the flood protection of an interim channel along the west boundary of **Village 24**. Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements and post a minimum maintenance bond of $25,000 or 25-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 *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.

6. All drainage facilities and the roadway improvements are considered interim facilities and must be maintained by the Master Developer until the facilities are dedicated to and formally accepted by the *City of Las Vegas City Council.*

7. Please obtain necessary 404 permits from Army Corps of Engineers and provide a copy of the permit to Flood Control prior to issuance of the grading permit. The contact information for Army Corps of Engineers is listed below:

   Steven W. Roberts
   Chief, Regulatory Field Office
   US Army Corps of Engineers
   321 North Mall Drive
   Suite L-101
   St. George, UT 84790
   (435) 986-3979 (Office)
   (435) 986-3981 (FAX)
   steven.w.roberts@usace.army.mil

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

END OF REMARKS
ays

T/R/S: T20S/R59E/33
AREA K-33

REGIONAL FLOOD CONTROL DISTRICT

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

BOARD OF DIRECTORS

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City of Boulder City

April 26, 2016

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

DISTRICT CONCURRENCE: SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3 STREET IMPROVEMENTS (SUNCREEK TO ALTA) (DS #4757B) (RFCD No. 16-9668)

Dear Mr. Kwon:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated September 30, 2015, and Addendum No. 1 dated February 22, 2016 for above-mentioned project as submitted by COLLINS ENGINEERS, INC. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Department of Public Works dated March 16, 2016.

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*. As noted in study, site resides in a Special Flood Hazard Area (SFHA) designated as "Zone A" per the effective Flood Insurance Rate Map (FIRM). Therefore, consultant should be advised that this acceptance does not serve to amend the FIRM or remove the SFHA.

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by COLLINS ENGINEERS, INC. 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

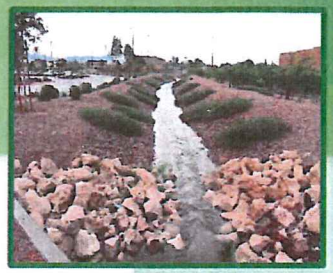
BY: _____
Abigail Mayrena, P.E., CFM
Principal Civil Engineer

AM:sa

c: Kenneth T. Yamada, P.E., Collins Engineers, Inc.

P:\Letters and Memos\Local Drainage\Land Development & Drainage\2016\L-16-9668.doc

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



Addendum 1 to the Drainage Study for Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements

APN 137-33-801-002

February 2016

Prepared for:

The Howard Hughes Company, LLC
10801 W Charleston Blvd, Suite 300,
Las Vegas, NV 89146
Contact: 702-791-4600

Prepared by:

COLLINS ENGINEERS INC.

3130 S. Durango Drive, Suite 404
Las Vegas, Nevada 89117
702.248.8000 • www.collinsengr.com

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[TITLE]
 Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements
 66-Inch Storm Drain Capacity Analysis
 Collins Engineers Job No. 9106

[REPORT]
COMPOSITE_ONLY

[NETWORK]
**TYPE            NAME
**-----           -------
Outlet            "EX MH#33"
Reach             "Link10"
Reach             "Link9"
Join              "SDMH8"
Reach             "Link8"
Reach             "Link7"
Reach             "Link6"
Join              "SDMH5"
Reach             "Link5"
Join              "SDMH 4"
Reach             "Link12"
Reach             "Link11"
Join              "SDMH3"
Reach             "Link3"
Reach             "Link2"
Reach             "Link1"
Headwork          "CB"

**BRANCH DEFINITIONS


"SDMH3_Branch1"
Join              "SDMH3"
Reach             "Link16"
Headwork          "DI #1"


"SDMH3_Branch2"
Join              "SDMH3"
Reach             "Link17"
Headwork          "DI #2"


"SDMH 4_Branch1"
Join              "SDMH 4"
Reach             "Link13"
Headwork          "CB L"


"SDMH5_Branch1"
Join              "SDMH5"
Reach             "Link14"
Headwork          "DI #3"


"SDMH5_Branch2"
Join              "SDMH5"
Reach             "Link15"
Headwork          "DI #4"
```

"SDMH8_Branch1"
Join "SDMH8"
Reach "Link18"
Headwork "CB M"

"SDMH8_Branch2"
Join "SDMH8"
Reach "Link19"
Headwork "DI #5"

"SDMH8_Branch3"
Join "SDMH8"
Reach "Link20"
Headwork "DI #6"

[OUTLET]

**NAME	STATION	INVERT ELEV	GROUND ELEV	CHANNEL ID	WATER SURFACE ELEV (opt.)
"EX MH#33"	1000	435.34	448.3	"66-inch"	44.32

[HEADWORK]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	FLOW	WATER SURFACE ELEV (opt.)
"CB"	551.18	570	"66-inch"	143	100
"CB L"	506.99	530	"36-inch"	38	0
"DI #3"	486.99	498.1	"24-inch"	4.4	0
"DI #4"	486.58	498.1	"24-inch"	5.8	0
"DI #1"	524.71	535	"24-inch"	3	0
"DI #2"	523.65	533.8	"24-inch"	5.8	0
"CB M"	440.7	460	"42-INCH"	53	0
"DI #5"	441.87	453.8	"24-inch"	9.2	0
"DI #6"	442.05	453	"24-inch"	6.1	0

[WALLENTRANCE]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT(opt.)

[WALLEXIT]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT(opt.)

[BRIDGEENTRANCE]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	REDUCTION FACTOR(opt.)

[BRIDGEEXIT]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	REDUCTION FACTOR(opt.)

[JOIN]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	NUMBER OF BRANCHES	CONFLUENCE ANGLE

				Crossbridge			
"SDMH3"	520	533.5	"66-inch"	6	0.013	2	
"SDMH3_Branch1"	523.5		"24-inch"				75
"SDMH3_Branch2"	523.5		"24-inch"				-90
"SDMH 4"	502.4	516	"66-inch"	6	0.013	1	
"SDMH 4_Branch1"	504.9		"36-inch"				90
"SDMH5"	482.7	496.6	"66-inch"	6	0.013	2	
"SDMH5_Branch1"	486.2		"24-inch"				60
"SDMH5_Branch2"	486.2		"24-inch"				-30
"SDMH8"	438.4	452.6	"66-inch"	6	0.013	3	
"SDMH8_Branch1"	439.4		"42-INCH"				90
"SDMH8_Branch2"	440.9		"24-inch"				64
"SDMH8_Branch3"	441.9		"24-inch"				-90

[JUNCTION]

**Name	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	NUMBER OF LATERALS	CONFLUENCE ANGLE	FLOW

[TRANSITION]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n

[REACH]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	CURVE (opt)	ANGLE POINT(opt)	NUMBER MANHOLES(opt)
"Link1"	551.18	570	"66-inch"	118	0.013	0	15	1
"Link2"	550	563.7	"66-inch"	135.1	0.013	0	0	1
"Link3"	546.3	558.9	"66-inch"	407.7	0.013	0	0	0
"Link5"	502.4	516	"66-inch"	272.5	0.013	0	0	0
"Link6"	482.7	496.6	"66-inch"	395.6	0.013	0	0	0
"Link7"	455	468.7	"66-inch"	153.35	0.013	0	0	1
"Link8"	444.8	458.2	"66-inch"	108.02	0.013	0	0	0
"Link9"	438.4	452.6	"66-inch"	38.6	0.013	0	0	0
"Link10"	438.1	450	"66-inch"	184.54	0.013	0	0	0
"Link11"	520	533.5	"66-inch"	116.98	0.013	0	0	0
"Link12"	511.72	525.4	"66-inch"	132.07	0.013	0	0	0
"Link13"	506.99	530	"36-inch"	101.5	0.013	0	0	0
"Link14"	486.99	498.1	"24-inch"	36.5	0.013	0	0	0
"Link15"	486.58	498.1	"24-inch"	15.8	0.013	0	0	0
"Link16"	524.71	535	"24-inch"	57.6	0.013	0	0	0
"Link17"	523.65	533.8	"24-inch"	4.5	0.013	0	0	0
"Link18"	440.7	460	"42-INCH"	127	0.013	0	0	0
"Link19"	441.87	453.8	"24-inch"	45.8	0.013	0	0	0
"Link20"	442.05	453	"24-inch"	4.5	0.013	0	0	0

[DROP]

**Name	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT

[CHANNEL]

**REGULAR TYPES 1-4 7-8

**ID	TYPE	HEIGHT	WIDTH	LEFT SLOPE	RIGHT SLOPE	NUMBER PIERS	AVG PIER WIDTH	INVERT CROSS FALL	NUM OF BARRELS

Crossbridge

"66-inch"	4	5.5										
"36-inch"	4	3							1			
"24-inch"	4	2							1			
"42-INCH"	4	3.5							1			
									1			

**IRREGULAR TYPES 5-6

**ID	TYPE	NUMBER	AVG PIER	PIER1	PIER2	PIER3	PIER4	PIER5	PIER6	PIER7	PIER8	PIER9	PIER10
**		PIERS	WIDTH	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV

[POINT]

**ID	XCOORD	YCOORD

****
Water Surface Profile Gradient (WSPG)
XP WSPG
Engine Version 3.0 30/09/2011
XP Solutions www.xpsolutions.com
****

INPUT FILE
****
H:\Cad\Land\9106\ADMIN\Drainage\CROSSBRIDGE\TDS\ADD1\Hydraulic\wspg\Crossbridge.wsx
Computed 02/09/16 09:22:28

TITLE INFORMATION
****
Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements
66-Inch Storm Drain Capacity Analysis
Collins Engineers Job No. 9106

WARNING SUMMARY
****

RESULTS
****

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Main Line
==========

Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"EX MH#33"	Outlet	1000.00	435.34	448.30	438.544	3.204	268.30	1	18.68	5.42	443.96	0.000	4.552	0.000	0.00000	0.000	Circular Pipe
"Link10"	Reach	1184.54	438.10	450.00	441.248	3.148	268.30	1	19.08	5.65	446.90	0.000	4.552	2.092	0.01496	3.241	Circular Pipe
"Link9"	Reach	1223.14	438.40	452.60	441.448	3.048	268.30	1	19.85	6.12	447.57	0.000	4.552	2.225	0.00777	4.103	Circular Pipe
"SDMH8"	Join	1229.14	438.40	452.60	440.225	1.825	200.00	1	29.04	13.09	453.32	0.000	3.959	0.000	0.00000	0.000	Circular Pipe
"Link8"	Reach	1337.16	444.80	458.20	446.592	1.792	200.00	1	29.76	13.75	460.35	0.000	3.959	4.594	0.05925	1.853	Circular Pipe
"Link7"	Reach	1490.51	455.00	468.70	456.779	1.779	200.00	1	30.06	14.03	470.81	0.000	3.959	4.659	0.06651	1.798	Circular Pipe
	"i.p."	1654.77	466.50	480.28	468.297	1.796	200.00	1	29.69	13.68	481.98	0.000	3.959	4.578	0.07002	1.774	Circular Pipe
	"i.p."	1815.58	477.76	491.63	479.621	1.859	200.00	1	28.30	12.44	492.06	0.000	3.959	4.280	0.07002	1.774	Circular Pipe
"Link6"	Reach	1886.11	482.70	496.60	484.625	1.925	200.00	1	26.99	11.31	495.93	0.000	3.959	4.002	0.07002	1.774	Circular Pipe
"SDMH5"	Join	1892.11	482.70	496.60	484.456	1.756	189.80	1	29.05	13.10	497.56	0.000	3.856	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1989.81	489.76	503.56	491.575	1.812	189.80	1	27.83	12.02	503.60	0.000	3.856	4.270	0.07229	1.712	Circular Pipe
	"i.p."	2047.83	493.96	507.69	495.833	1.876	189.80	1	26.53	10.93	506.76	0.000	3.856	3.992	0.07229	1.712	Circular Pipe
	"i.p."	2085.69	496.69	510.38	498.637	1.942	189.80	1	25.30	9.94	508.58	0.000	3.856	3.732	0.07229	1.712	Circular Pipe
	"i.p."	2113.14	498.68	512.34	500.691	2.012	189.80	1	24.12	9.03	509.73	0.000	3.856	3.488	0.07229	1.712	Circular Pipe
	"i.p."	2134.21	500.20	513.84	502.286	2.084	189.80	1	23.00	8.21	510.50	0.000	3.856	3.259	0.07229	1.712	Circular Pipe
	"i.p."	2150.97	501.41	515.03	503.573	2.159	189.80	1	21.93	7.47	511.04	0.000	3.856	3.044	0.07229	1.712	Circular Pipe
"Link5"	Reach	2164.61	502.40	516.00	504.638	2.238	189.80	1	20.91	6.79	511.43	0.000	3.856	2.843	0.07229	1.712	Circular Pipe

"SDMH 4"	Join	2170.61	502.40	516.00	503.949	1.549	151.80	1	27.64	11.86	515.81	0.000	3.437	0.000	0.00000	0.000	Circular Pipe
"Link12"	Reach	2302.68	511.72	525.40	513.307	1.587	151.80	1	26.73	11.10	524.40	0.000	3.437	4.413	0.07057	1.535	Circular Pipe
	"i.p."	2375.52	516.88	530.44	518.515	1.640	151.80	1	25.55	10.13	528.65	0.000	3.437	4.143	0.07078	1.534	Circular Pipe
"Link11"	Reach	2419.66	520.00	533.50	521.697	1.697	151.80	1	24.36	9.21	530.91	0.000	3.437	3.876	0.07078	1.534	Circular Pipe
"SDMH3"	Join	2425.66	520.00	533.50	521.530	1.530	143.00	1	26.51	10.91	532.44	0.000	3.332	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2605.85	531.62	544.73	533.195	1.571	143.00	1	25.54	10.13	543.32	0.000	3.332	4.239	0.06451	1.523	Circular Pipe
	"i.p."	2685.51	536.76	549.69	538.388	1.626	143.00	1	24.35	9.21	547.59	0.000	3.332	3.967	0.06451	1.523	Circular Pipe
	"i.p."	2729.95	539.63	552.46	541.312	1.683	143.00	1	23.22	8.37	549.68	0.000	3.332	3.711	0.06451	1.523	Circular Pipe
	"i.p."	2759.95	541.56	554.33	543.306	1.742	143.00	1	22.14	7.61	550.91	0.000	3.332	3.472	0.06451	1.523	Circular Pipe
	"i.p."	2782.07	542.99	555.70	544.794	1.803	143.00	1	21.11	6.92	551.71	0.000	3.332	3.247	0.06451	1.523	Circular Pipe
	"i.p."	2799.21	544.10	556.77	545.964	1.867	143.00	1	20.12	6.29	552.25	0.000	3.332	3.036	0.06451	1.523	Circular Pipe
	"i.p."	2812.91	544.98	557.63	546.914	1.933	143.00	1	19.19	5.72	552.63	0.000	3.332	2.838	0.06451	1.523	Circular Pipe
	"i.p."	2824.10	545.70	558.32	547.705	2.002	143.00	1	18.29	5.20	552.90	0.000	3.332	2.653	0.06451	1.523	Circular Pipe
"Link3"	Reach	2833.36	546.30	558.90	548.374	2.074	143.00	1	17.44	4.72	553.10	0.000	3.332	2.479	0.06451	1.523	Circular Pipe
	"i.p."	2869.29	547.28	560.18	549.422	2.138	143.00	1	16.74	4.35	553.77	0.000	3.332	2.337	0.02739	1.903	Circular Pipe
	"i.p."	2898.87	548.09	561.23	550.310	2.216	143.00	1	15.96	3.95	554.26	0.000	3.332	2.182	0.02739	1.903	Circular Pipe
	"i.p."	2920.67	548.69	562.00	550.988	2.297	143.00	1	15.22	3.60	554.58	0.000	3.332	2.037	0.02739	1.903	Circular Pipe
	"i.p."	2937.32	549.15	562.59	551.528	2.381	143.00	1	14.51	3.27	554.80	0.000	3.332	1.901	0.02739	1.903	Circular Pipe
	"i.p."	2950.29	549.50	563.05	551.972	2.469	143.00	1	13.83	2.97	554.94	0.000	3.332	1.773	0.02739	1.903	Circular Pipe
	"i.p."	2960.47	549.78	563.42	552.342	2.561	143.00	1	13.19	2.70	555.04	0.000	3.332	1.654	0.02739	1.903	Circular Pipe
"Link2"	Reach	2968.46	550.00	563.70	552.658	2.658	143.00	1	12.58	2.46	555.11	0.000	3.332	1.541	0.02739	1.903	Circular Pipe
	"i.p."	3016.50	550.48	566.26	553.227	2.747	143.00	1	12.06	2.26	555.48	0.000	3.332	1.447	0.01000	2.506	Circular Pipe
	"i.p."	3048.20	550.80	567.96	553.649	2.852	143.00	1	11.49	2.05	555.70	0.000	3.332	1.346	0.01000	2.506	Circular Pipe
	"i.p."	3067.36	550.99	568.98	553.952	2.963	143.00	1	10.96	1.87	555.82	0.000	3.332	1.252	0.01000	2.506	Circular Pipe
	"i.p."	3078.74	551.10	569.59	554.182	3.079	143.00	1	10.45	1.70	555.88	0.000	3.332	1.163	0.01000	2.506	Circular Pipe
	"i.p."	3084.67	551.16	569.90	554.364	3.202	143.00	1	9.96	1.54	555.91	0.000	3.332	1.080	0.01000	2.506	Circular Pipe
"Link1"	Reach	3086.46	551.18	570.00	554.511	3.331	143.00	1	9.50	1.40	555.91	0.000	3.332	1.000	0.01000	2.506	Circular Pipe
"CB"	Headwrk	3086.46	551.18	570.00	554.512	3.332	143.00	1	9.50	1.40	555.91	0.000	3.332	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH3_Branch1

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	2425.66	523.50	533.50	523.911	0.411	3.00	1	6.46	0.65	524.56	0.000	0.604	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2445.58	523.92	534.02	524.334	0.416	3.00	1	6.34	0.62	524.96	0.000	0.604	2.071	0.02101	0.409	Circular Pipe
	"i.p."	2461.61	524.26	534.44	524.685	0.430	3.00	1	6.05	0.57	525.25	0.000	0.604	1.940	0.02101	0.409	Circular Pipe
	"i.p."	2469.05	524.41	534.63	524.856	0.445	3.00	1	5.77	0.52	525.37	0.000	0.604	1.817	0.02101	0.409	Circular Pipe
	"i.p."	2473.60	524.51	534.75	524.967	0.460	3.00	1	5.50	0.47	525.44	0.000	0.604	1.702	0.02101	0.409	Circular Pipe
	"i.p."	2476.67	524.57	534.83	525.047	0.476	3.00	1	5.24	0.43	525.47	0.000	0.604	1.594	0.02101	0.409	Circular Pipe
	"i.p."	2478.85	524.62	534.89	525.109	0.492	3.00	1	5.00	0.39	525.50	0.000	0.604	1.492	0.02101	0.409	Circular Pipe
	"i.p."	2480.44	524.65	534.93	525.159	0.509	3.00	1	4.77	0.35	525.51	0.000	0.604	1.397	0.02101	0.409	Circular Pipe
	"i.p."	2481.57	524.67	534.96	525.201	0.526	3.00	1	4.54	0.32	525.52	0.000	0.604	1.308	0.02101	0.409	Circular Pipe

	"i.p."	2482.36	524.69	534.98	525.236	0.545	3.00	1	4.33	0.29	525.53	0.000	0.604	1.224	0.02101	0.409	Circular Pipe
	"i.p."	2482.87	524.70	534.99	525.265	0.563	3.00	1	4.13	0.26	525.53	0.000	0.604	1.146	0.02101	0.409	Circular Pipe
	"i.p."	2483.17	524.71	535.00	525.291	0.583	3.00	1	3.94	0.24	525.53	0.000	0.604	1.072	0.02101	0.409	Circular Pipe
"Link16"	Reach	2483.26	524.71	535.00	525.313	0.603	3.00	1	3.76	0.22	525.53	0.000	0.604	1.003	0.02101	0.409	Circular Pipe
"DI #1"	Headwrk	2483.26	524.71	535.00	525.314	0.604	3.00	1	3.75	0.22	525.53	0.000	0.604	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH3_Branch2

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	2425.66	523.50	533.50	524.170	0.670	5.80	1	6.29	0.61	524.78	0.000	0.851	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2426.73	523.54	533.57	524.223	0.687	5.80	1	6.07	0.57	524.80	0.000	0.851	1.509	0.03333	0.506	Circular Pipe
	"i.p."	2427.89	523.57	533.65	524.286	0.711	5.80	1	5.79	0.52	524.81	0.000	0.851	1.410	0.03333	0.506	Circular Pipe
	"i.p."	2428.77	523.60	533.71	524.341	0.737	5.80	1	5.52	0.47	524.81	0.000	0.851	1.318	0.03333	0.506	Circular Pipe
	"i.p."	2429.40	523.62	533.75	524.388	0.763	5.80	1	5.26	0.43	524.82	0.000	0.851	1.232	0.03333	0.506	Circular Pipe
	"i.p."	2429.83	523.64	533.78	524.430	0.791	5.80	1	5.02	0.39	524.82	0.000	0.851	1.150	0.03333	0.506	Circular Pipe
	"i.p."	2430.08	523.65	533.79	524.467	0.820	5.80	1	4.78	0.36	524.82	0.000	0.851	1.074	0.03333	0.506	Circular Pipe
"Link17"	Reach	2430.16	523.65	533.80	524.500	0.850	5.80	1	4.56	0.32	524.82	0.000	0.851	1.003	0.03333	0.506	Circular Pipe
"DI #2"	Headwrk	2430.16	523.65	533.80	524.501	0.851	5.80	1	4.55	0.32	524.82	0.000	0.851	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH 4_Branch1

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	2170.61	504.90	516.00	506.277	1.377	38.00	1	12.01	2.24	508.52	0.000	2.006	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2198.08	505.47	519.79	506.877	1.412	38.00	1	11.62	2.10	508.98	0.000	2.006	1.961	0.02059	1.314	Circular Pipe
	"i.p."	2222.86	505.98	523.21	507.441	1.465	38.00	1	11.08	1.91	509.35	0.000	2.006	1.827	0.02059	1.314	Circular Pipe
	"i.p."	2238.86	506.31	525.41	507.826	1.521	38.00	1	10.57	1.73	509.56	0.000	2.006	1.701	0.02059	1.314	Circular Pipe
	"i.p."	2249.95	506.53	526.94	508.113	1.579	38.00	1	10.08	1.58	509.69	0.000	2.006	1.582	0.02059	1.314	Circular Pipe
	"i.p."	2257.89	506.70	528.04	508.338	1.641	38.00	1	9.61	1.43	509.77	0.000	2.006	1.471	0.02059	1.314	Circular Pipe
	"i.p."	2263.57	506.81	528.82	508.520	1.705	38.00	1	9.16	1.30	509.82	0.000	2.006	1.366	0.02059	1.314	Circular Pipe
	"i.p."	2267.55	506.90	529.37	508.670	1.774	38.00	1	8.73	1.18	509.85	0.000	2.006	1.267	0.02059	1.314	Circular Pipe

	"i.p."	2270.17	506.95	529.73	508.796	1.846	38.00	1	8.33	1.08	509.87	0.000	2.006	1.174	0.02059	1.314	Circular Pipe
	"i.p."	2271.64	506.98	529.94	508.903	1.923	38.00	1	7.94	0.98	509.88	0.000	2.006	1.085	0.02059	1.314	Circular Pipe
"Link13"	Reach	2272.11	506.99	530.00	508.995	2.005	38.00	1	7.57	0.89	509.88	0.000	2.006	1.001	0.02059	1.314	Circular Pipe
"CB L"	Headwrk	2272.11	506.99	530.00	508.996	2.006	38.00	1	7.57	0.89	509.88	0.000	2.006	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH5_Branch1
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1892.11	486.20	496.60	486.708	0.508	4.40	1	7.01	0.76	487.47	0.000	0.737	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1903.56	486.45	497.07	486.969	0.521	4.40	1	6.76	0.71	487.68	0.000	0.737	1.955	0.02164	0.491	Circular Pipe
	"i.p."	1911.85	486.63	497.41	487.167	0.539	4.40	1	6.44	0.64	487.81	0.000	0.737	1.830	0.02164	0.491	Circular Pipe
	"i.p."	1917.10	486.74	497.63	487.299	0.558	4.40	1	6.14	0.59	487.88	0.000	0.737	1.713	0.02164	0.491	Circular Pipe
	"i.p."	1920.71	486.82	497.78	487.396	0.577	4.40	1	5.86	0.53	487.93	0.000	0.737	1.603	0.02164	0.491	Circular Pipe
	"i.p."	1923.30	486.88	497.88	487.473	0.597	4.40	1	5.58	0.48	487.96	0.000	0.737	1.500	0.02164	0.491	Circular Pipe
	"i.p."	1925.20	486.92	497.96	487.534	0.618	4.40	1	5.32	0.44	487.97	0.000	0.737	1.403	0.02164	0.491	Circular Pipe
	"i.p."	1926.56	486.95	498.02	487.586	0.640	4.40	1	5.08	0.40	487.99	0.000	0.737	1.313	0.02164	0.491	Circular Pipe
	"i.p."	1927.52	486.97	498.06	487.629	0.663	4.40	1	4.84	0.36	487.99	0.000	0.737	1.228	0.02164	0.491	Circular Pipe
	"i.p."	1928.14	486.98	498.08	487.666	0.686	4.40	1	4.62	0.33	488.00	0.000	0.737	1.148	0.02164	0.491	Circular Pipe
	"i.p."	1928.50	486.99	498.10	487.698	0.710	4.40	1	4.40	0.30	488.00	0.000	0.737	1.073	0.02164	0.491	Circular Pipe
"Link14"	Reach	1928.61	486.99	498.10	487.726	0.736	4.40	1	4.20	0.27	488.00	0.000	0.737	1.003	0.02164	0.491	Circular Pipe
"DI #3"	Headwrk	1928.61	486.99	498.10	487.727	0.737	4.40	1	4.19	0.27	488.00	0.000	0.737	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH5_Branch2
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1892.11	486.20	496.60	486.821	0.621	5.80	1	6.97	0.76	487.58	0.000	0.851	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1896.42	486.30	497.01	486.945	0.641	5.80	1	6.68	0.69	487.64	0.000	0.851	1.726	0.02405	0.550	Circular Pipe
	"i.p."	1899.90	486.39	497.34	487.051	0.664	5.80	1	6.37	0.63	487.68	0.000	0.851	1.614	0.02405	0.550	Circular Pipe
	"i.p."	1902.47	486.45	497.58	487.136	0.687	5.80	1	6.07	0.57	487.71	0.000	0.851	1.509	0.02405	0.550	Circular Pipe
	"i.p."	1904.38	486.50	497.76	487.207	0.711	5.80	1	5.79	0.52	487.73	0.000	0.851	1.410	0.02405	0.550	Circular Pipe

	"i.p."	1905.77	486.53	497.90	487.266	0.737	5.80	1	5.52	0.47	487.74	0.000	0.851	1.318	0.02405	0.550	Circular Pipe
	"i.p."	1906.76	486.55	497.99	487.316	0.763	5.80	1	5.26	0.43	487.75	0.000	0.851	1.232	0.02405	0.550	Circular Pipe
	"i.p."	1907.42	486.57	498.05	487.359	0.791	5.80	1	5.02	0.39	487.75	0.000	0.851	1.150	0.02405	0.550	Circular Pipe
	"i.p."	1907.79	486.58	498.09	487.397	0.820	5.80	1	4.78	0.36	487.75	0.000	0.851	1.074	0.02405	0.550	Circular Pipe
"Link15"	Reach	1907.91	486.58	498.10	487.430	0.850	5.80	1	4.56	0.32	487.75	0.000	0.851	1.003	0.02405	0.550	Circular Pipe
"DI #4"	Headwrk	1907.91	486.58	498.10	487.431	0.851	5.80	1	4.55	0.32	487.75	0.000	0.851	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH8_Branch1
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1229.14	439.40	452.60	441.228	1.828	53.00	1	10.43	1.69	442.92	0.000	2.277	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1279.35	439.91	455.53	441.781	1.867	53.00	1	10.15	1.60	443.38	0.000	2.277	1.464	0.01024	1.792	Circular Pipe
	"i.p."	1319.10	440.32	457.84	442.261	1.940	53.00	1	9.68	1.46	443.72	0.000	2.277	1.360	0.01024	1.792	Circular Pipe
	"i.p."	1338.78	440.52	458.99	442.539	2.017	53.00	1	9.23	1.32	443.86	0.000	2.277	1.263	0.01024	1.792	Circular Pipe
	"i.p."	1349.38	440.63	459.61	442.729	2.098	53.00	1	8.80	1.20	443.93	0.000	2.277	1.170	0.01024	1.792	Circular Pipe
	"i.p."	1354.61	440.68	459.91	442.869	2.185	53.00	1	8.39	1.09	443.96	0.000	2.277	1.083	0.01024	1.792	Circular Pipe
"Link18"	Reach	1356.14	440.70	460.00	442.976	2.276	53.00	1	8.00	0.99	443.97	0.000	2.277	1.001	0.01024	1.792	Circular Pipe
"CB M"	Headwrk	1356.14	440.70	460.00	442.977	2.277	53.00	1	8.00	0.99	443.97	0.000	2.277	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH8_Branch2
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1229.14	440.90	452.60	441.657	0.757	9.20	1	8.44	1.11	442.76	0.000	1.083	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1242.31	441.18	452.94	441.956	0.778	9.20	1	8.14	1.03	442.99	0.000	1.083	1.885	0.02118	0.723	Circular Pipe
	"i.p."	1253.20	441.41	453.23	442.215	0.806	9.20	1	7.76	0.94	443.15	0.000	1.083	1.761	0.02118	0.723	Circular Pipe
	"i.p."	1260.28	441.56	453.42	442.395	0.835	9.20	1	7.40	0.85	443.25	0.000	1.083	1.644	0.02118	0.723	Circular Pipe
	"i.p."	1265.20	441.66	453.54	442.530	0.866	9.20	1	7.06	0.77	443.30	0.000	1.083	1.534	0.02118	0.723	Circular Pipe
	"i.p."	1268.71	441.74	453.64	442.636	0.898	9.20	1	6.73	0.70	443.34	0.000	1.083	1.431	0.02118	0.723	Circular Pipe
	"i.p."	1271.22	441.79	453.70	442.723	0.931	9.20	1	6.42	0.64	443.36	0.000	1.083	1.334	0.02118	0.723	Circular Pipe
	"i.p."	1272.97	441.83	453.75	442.795	0.966	9.20	1	6.12	0.58	443.38	0.000	1.083	1.243	0.02118	0.723	Circular Pipe

	"i.p."	1274.10	441.85	453.78	442.855	1.003	9.20	1	5.83	0.53	443.38	0.000	1.083	1.158	0.02118	0.723	Circular Pipe
	"i.p."	1274.74	441.87	453.79	442.907	1.042	9.20	1	5.56	0.48	443.39	0.000	1.083	1.077	0.02118	0.723	Circular Pipe
"Link19"	Reach	1274.94	441.87	453.80	442.952	1.082	9.20	1	5.30	0.44	443.39	0.000	1.083	1.002	0.02118	0.723	Circular Pipe
"DI #5"	Headwrk	1274.94	441.87	453.80	442.953	1.083	9.20	1	5.30	0.44	443.39	0.000	1.083	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH8_Branch3

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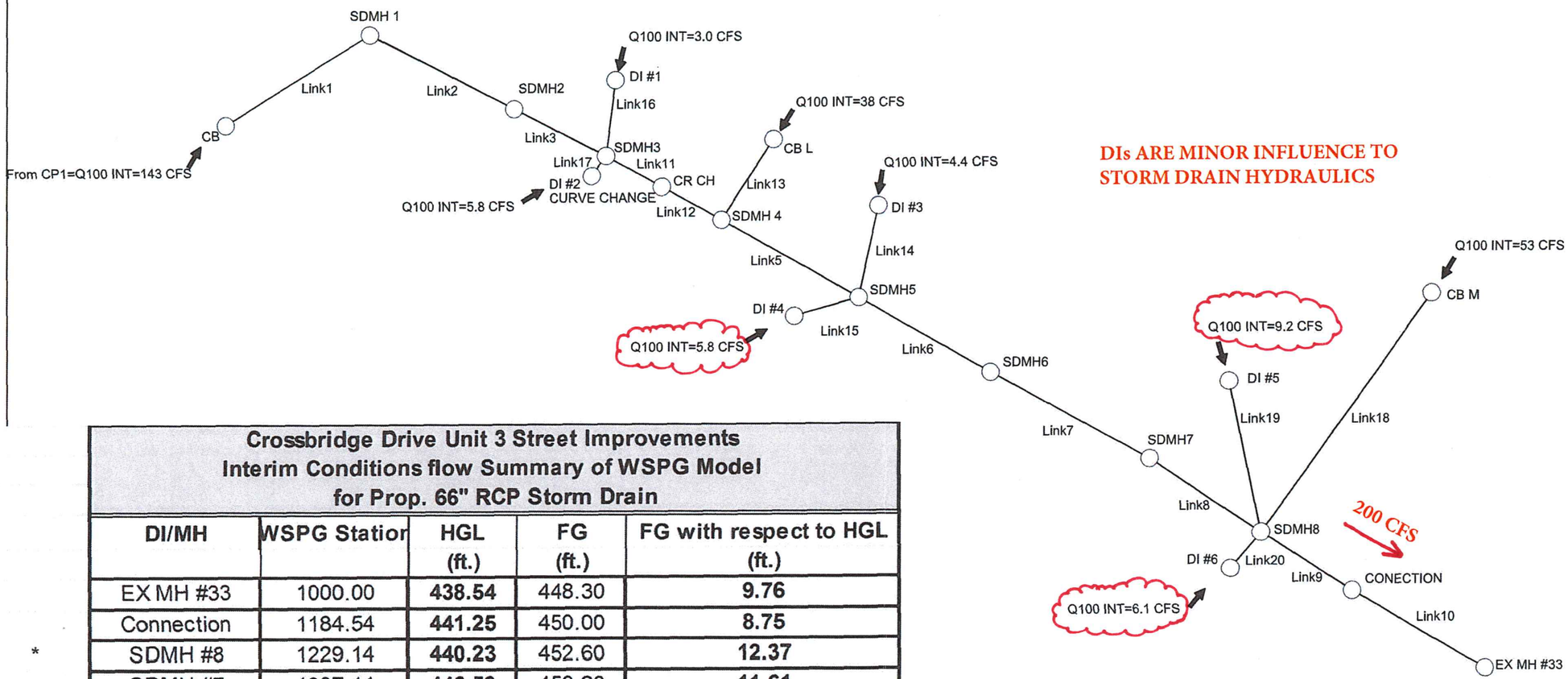
Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1229.14	441.90	452.60	442.589	0.689	6.10	1	6.36	0.63	443.22	0.000	0.874	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1230.09	441.93	452.68	442.636	0.705	6.10	1	6.17	0.59	443.23	0.000	0.874	1.511	0.03333	0.519	Circular Pipe
	"i.p."	1231.29	441.97	452.79	442.702	0.730	6.10	1	5.88	0.54	443.24	0.000	0.874	1.412	0.03333	0.519	Circular Pipe
	"i.p."	1232.20	442.00	452.87	442.758	0.756	6.10	1	5.61	0.49	443.25	0.000	0.874	1.319	0.03333	0.519	Circular Pipe
	"i.p."	1232.86	442.02	452.93	442.807	0.783	6.10	1	5.35	0.44	443.25	0.000	0.874	1.232	0.03333	0.519	Circular Pipe
	"i.p."	1233.30	442.04	452.97	442.851	0.812	6.10	1	5.10	0.40	443.25	0.000	0.874	1.151	0.03333	0.519	Circular Pipe
	"i.p."	1233.56	442.05	452.99	442.889	0.842	6.10	1	4.86	0.37	443.26	0.000	0.874	1.074	0.03333	0.519	Circular Pipe
"Link20"	Reach	1233.64	442.05	453.00	442.923	0.873	6.10	1	4.63	0.33	443.26	0.000	0.874	1.002	0.03333	0.519	Circular Pipe
"DI #6"	Headwrk	1233.64	442.05	453.00	442.924	0.874	6.10	1	4.63	0.33	443.26	0.000	0.874	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches



Crossbridge Drive Unit 3 Street Improvements
Interim Conditions flow Summary of WSPG Model
for Prop. 66" RCP Storm Drain

	DI/MH	WSPG Station	HGL (ft.)	FG (ft.)	FG with respect to HGL (ft.)
	EX MH #33	1000.00	**438.54**	448.30	**9.76**
	Connection	1184.54	**441.25**	450.00	**8.75**
*	SDMH #8	1229.14	**440.23**	452.60	**12.37**
	SDMH #7	1337.14	**446.59**	458.20	**11.61**
	SDMH #6	1490.54	**456.78**	468.70	**11.92**
*	SDMH #5	1892.14	**484.46**	496.60	**12.14**
*	SDMH #4	2170.64	**503.95**	516.00	**12.05**
*	SDMH #3	2425.74	**521.53**	533.50	**11.97**
	SDMH #2	2833.44	**548.37**	558.90	**10.53**
	SDMH #1	2968.56	**552.66**	563.70	**11.04**
	CB	3086.54	**554.51**	570.00	**15.49**

* Station is at the end of the Manhole

COLLINS ENGINEERS
2033 West Howard Ave.
Milwaukee, WI 53221
Phone: 414-282-6905
Fax: 414-282-6955

Client

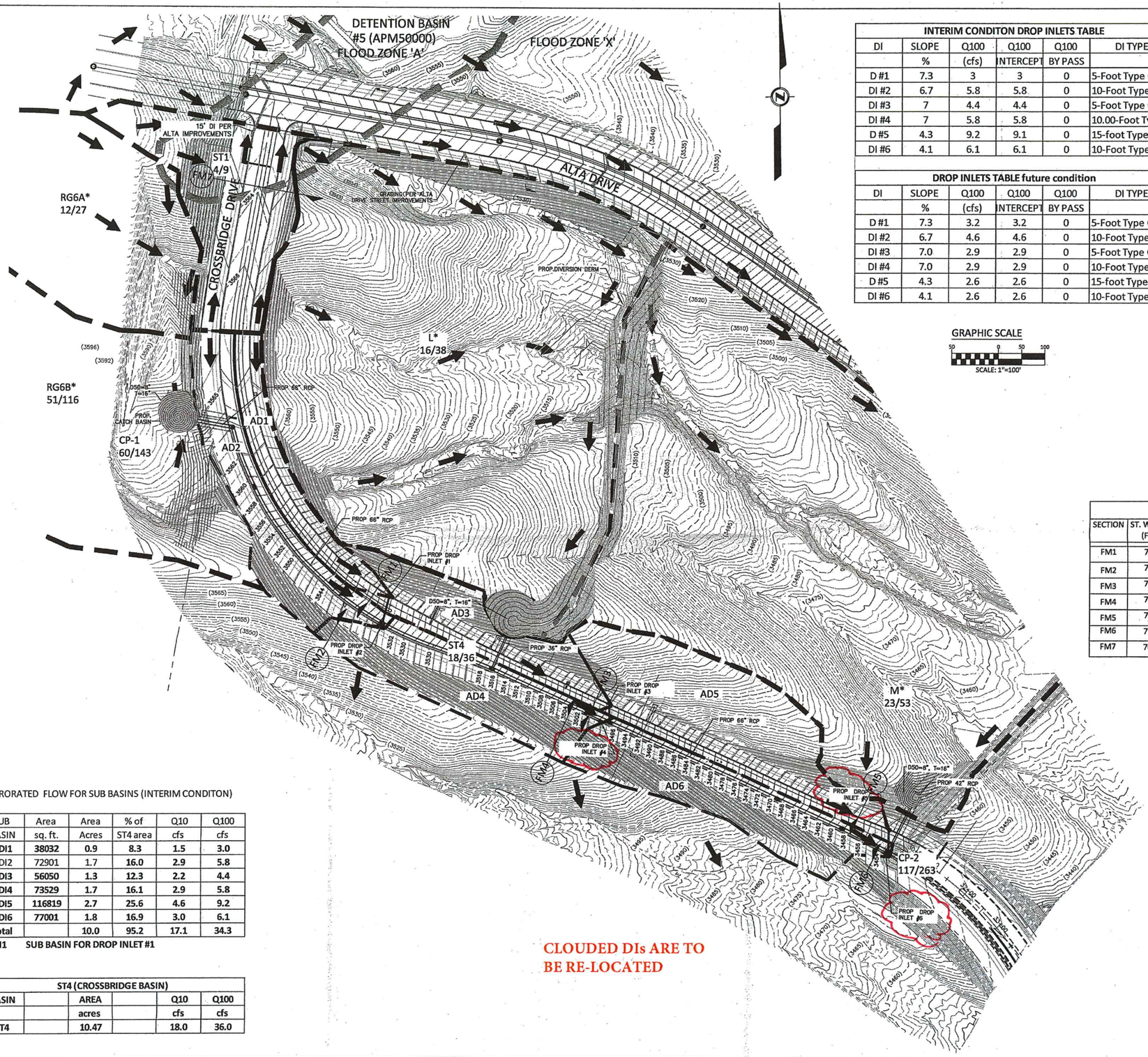
Or place Client Logo here

Address

SUMMERLIN VILLAGE 24
CROSSBRIDGE DRIVE UNIT 3 STREET
IMPROVEMENTS, APN:137-33-8
WSPG MODEL PLAN FRO 66" RCP

90106

INSPECTED BY: SAM
DRAWN BY: SAM
CHECKED BY: SAM
DATE: 02/08/16



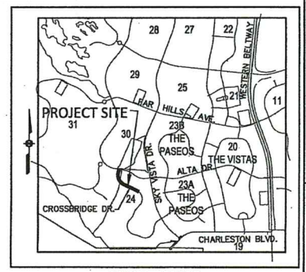
INTERIM CONDITON DROP INLETS TABLE					
DI	SLOPE	Q100	Q100	Q100	DI TYPE
	%	(cfs)	INTERCEPT	BY PASS	
D #1	7.3	3	3	0	5-Foot Type CM
DI #2	6.7	5.8	5.8	0	10-Foot Type CM
DI #3	7	4.4	4.4	0	5-Foot Type CM
DI #4	7	5.8	5.8	0	10.00-Foot Type CI
D #5	4.3	9.2	9.1	0	15-foot Type CM
DI #6	4.1	6.1	6.1	0	10-Foot Type CM

DROP INLETS TABLE future condition					
DI	SLOPE	Q100	Q100	Q100	DI TYPE
	%	(cfs)	INTERCEPT	BY PASS	
D #1	7.3	3.2	3.2	0	5-Foot Type CM
DI #2	6.7	4.6	4.6	0	10-Foot Type CM
DI #3	7.0	2.9	2.9	0	5-Foot Type CM
DI #4	7.0	2.9	2.9	0	10-Foot Type CM
D #5	4.3	2.6	2.6	0	15-foot Type CM
DI #6	4.1	2.6	2.6	0	10-Foot Type CM

GRAPHIC SCALE

50 0 50 100

SCALE: 1"=100'



VICINITY MAP
NTS

DRAINAGE AREA SUMMARY TABLE			
BASIN ID	AREA (ACRES)	Q_{10} (CFS)	Q_{100} (CFS)
ST1	2.50	4	9
ST4	10.47	18	36
RG6A*	9.60	12	27
RG6B*	43.0	51	116
L*	14.55	16	38
M*	19.37	23	53

CONCENTRATION POINT SUMMARY TABLE		
CONCENTRATION POINT	Q_{10} (CFS)	Q_{100} (CFS)
CP-1	63	143
CP-2	117	263

FLOW DEPTH ANALYSIS SUMMARY										
SECTION	ST. WIDTH (FT)	SLOPE (%)	Q_{100} (CFS)	D_{100} (ft)	V_{100} (ft/sec)	$D_{100} \times V_{100}$	Q_{10}	D_{10} (ft)	V_{10} (ft/sec)	$D_{10} \times V_{10}$
FM1	76	7.3	3.0	0.27	5.02	1.36	1.5	0.22	4.56	1.00
FM2	76	6.7	5.8	0.33	5.54	1.83	2.9	0.27	4.82	1.30
FM3	76	7.0	4.4	0.31	5.48	1.70	2.3	0.25	4.82	1.21
FM4	76	7.0	5.8	0.32	5.62	1.80	2.9	0.27	4.91	1.33
FM5	76	4.3	9.2	0.39	5.18	2.02	4.6	0.33	4.43	1.46
FM6	76	4.1	6.1	0.35	4.62	1.62	3.0	0.29	3.96	1.15
FM7	70	1.0	9.0	0.42	2.07	1.05	4.0	0.34	2.10	0.71

DRAINAGE LEGEND

$(Q_{10/100})$	PEAK 10 YR FLOW / PEAK 100 YR FLOW
	DRAINAGE AREA BOUNDARY
	DRAINAGE AREA FLOW DIRECTION
OND1	AREA DESIGNATION
CP1 ●	CONCENTRATION FLOW POINT
FM1	LOCATION OF HYDRAULIC CROSS SECTION

FLOOD ZONE NOTE:
THE PROJECT SITE LIES WITHIN FLOOD ZONE "A". PER FIRM PANEL 32003C2150 E AND 2125 E REVISED SEPTEMBER 27, 2002. PER FEMA, FLOOD ZONE "A" IS AN AREA IN THE 100-YEAR FLOODPLAIN.

PRORATED FLOW FOR SUB BASINS (INTERIM CONDITON)

SUB BASIN	Area sq. ft.	Area Acres	% of ST4 area	Q10 cfs	Q100 cfs
ADI1	**38032**	**0.9**	**8.3**	**1.5**	**3.0**
ADI2	72901	1.7	16.0	2.9	5.8
ADI3	**56050**	**1.3**	**12.3**	**2.2**	**4.4**
ADI4	**73529**	**1.7**	**16.1**	**2.9**	**5.8**
ADI5	**116819**	**2.7**	**25.6**	**4.6**	**9.2**
ADI6	**77001**	**1.8**	**16.9**	**3.0**	**6.1**
Total		**10.0**	**95.2**	**17.1**	**34.3**

***ADI1 SUB BASIN FOR DROP INLET #1**

ST4 (CROSSBRIDGE BASIN)					
BASIN		**AREA**		**Q10**	**Q100**
		acres		cfs	cfs
ST4		**10.47**		**18.0**	**36.0**

COLLINS ENGINEERS, INC.
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

NOT FOR CONSTRUCTION

NO.	DESCRIPTION OF REVISIONS	DATE	APPROVAL

THE HOWARD HUGHES COMPANY, LLC.

VILLAGE 24 CROSSBRIDGE DRIVE UNIT 3 STREET IMPROVEMENTS

SUB BASINS AND PRORATED FLOWS

DATE:	8/20/15
JOB NUMBER:	9106
DESIGNED:	SAM
DRAWN:	SAM
CHECKED:	SAM

SHEET NUMBER

FIG 7-A

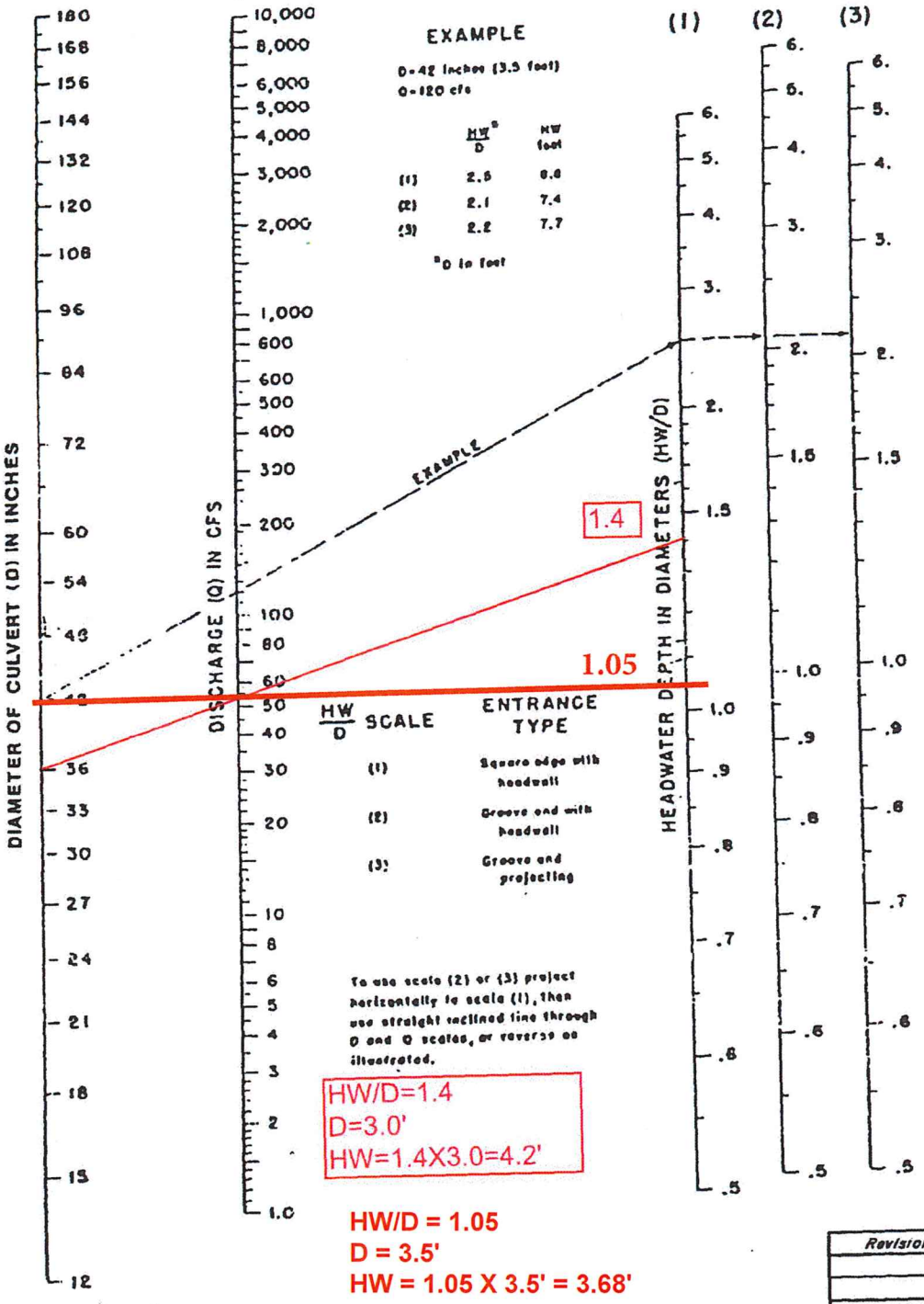
SID#____ PROJECT#_9106

CAD FILE: H:\Civil\Land\9106\ADMIN\Drainage\CROSSBRIDGE\TDSV\ADD1\DWG\FIG 7 --CROSSB.dwg PLOT DATE/TIME: 2/9/2016 -- 9:19am

REVISED CALCULATIONS FROM 42" RCP NOT 36" RCP

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH – INLET CONTROL RCP



Revision	Date

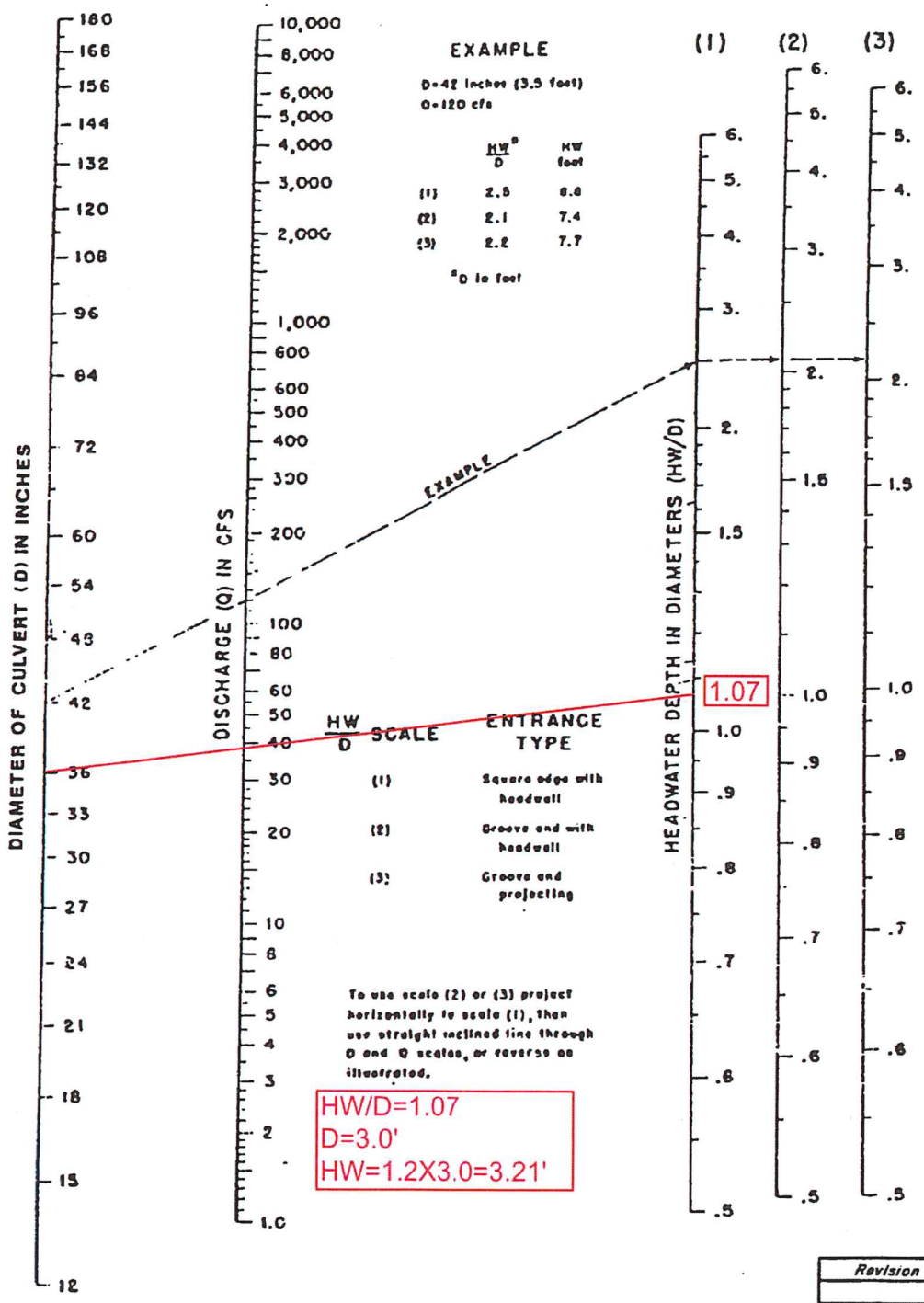
WRC ENGINEERING

REFERENCE: USDOT, FHWA, HDS, No. 5, 1985

FIGURE 1005

INLET CONTROL FOR PROP 36" RCP FROM BASIN M*

NOMOGRAPH – INLET CONTROL RCP



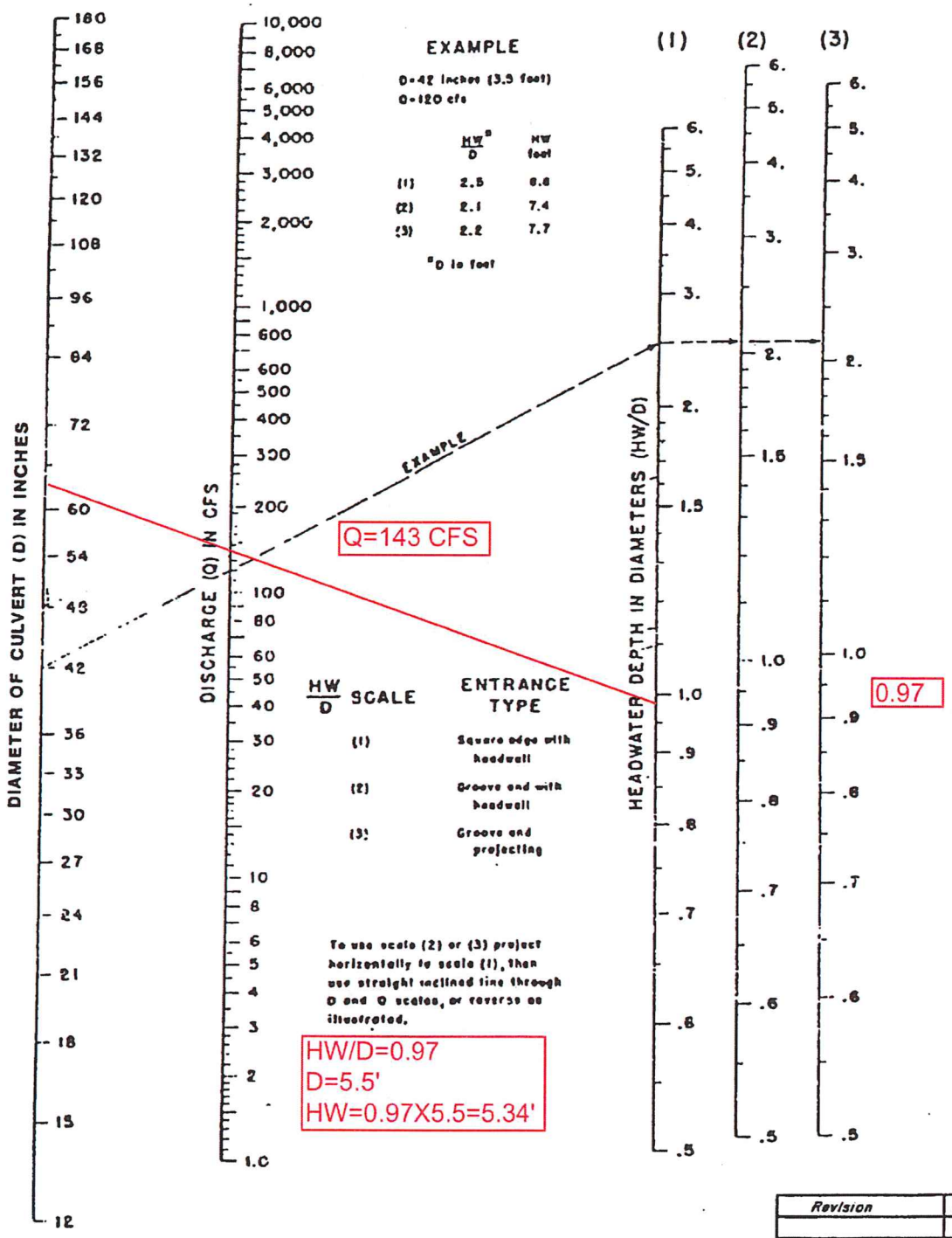
Revision	Date

WRC ENGINEERING	REFERENCE: USDOT, FHWA, HDS, No. 5, 1985	FIGURE 1005

INLET CONTROL FOR PROP 36" RCP FROM BASIN L*

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH – INLET CONTROL RCP



Revision	Date

WRC ENGINEERING

REFERENCE:
USDOT, FHWA, HDS, No. 5, 1985

FIGURE 1005

INLET CONTROL FOR PROP 66" RCP FROM CP-1

SUMMERLIN

SM

VILLAGE 24
CROSSBRIDGE DRIVE UNIT 3
STREET IMPROVEMENT PLANS

FROM ALTA DRIVE TO CROSSBRIDGE UNIT 2
SID #812 PROJECTS 10A & B

2015
A.P.N. 137-33-601-001

REV#	REV. DESCRIPTION	SHEET(S)	APPD BY	DATE

SHEET INDEX

1.	C1.01	COVER AND APPROVAL SHEET
2.	C1.02	GENERAL NOTES SHEET
3.	C3.01	HORIZONTAL CONTROL PLAN
4.	C4.01	MASTER GRADING PLAN
5.	C5.00	SEWER MASTER PLAN
6.	C5.01	STORM DRAIN MASTER PLAN
7.	C5.02	WATER MASTER PLAN
8.	C5.03	UTILITY PLAN AND PROFILE – STA:5+87.51 TO 10+00.00
9.	C5.04	UTILITY PLAN AND PROFILE – STA:10+00.00 TO 14+50.00
10.	C5.05	UTILITY PLAN AND PROFILE – STA:14+50.00 TO 19+00.00
11.	C5.06	UTILITY PLAN AND PROFILE – STA:19+00.00 TO 23+50.00
12.	C5.07	UTILITY PLAN AND PROFILE – STA:23+50.00 TO 28+00.00
13.	C5.08	UTILITY PLAN AND PROFILE – STA:28+00.00 TO 30+63.00
14.	C5.09	UTILITY LATERALS 1
15.	C5.10	UTILITY LATERALS 2
16.	C5.11	UTILITY LATERALS 3
17.	C5.12	ROUGH GRADING PLAN 1
18.	C5.13	ROUGH GRADING PLAN 2
19.	C6.01	SIGNAGE AND STRIPING PLAN 1
20.	C6.02	SIGNAGE AND STRIPING PLAN 2
21.	C6.03	STREET LIGHTING PLAN 1
22.	C6.04	STREET LIGHTING PLAN 2
23.	C8.01	DETAILS SHEET 1
24.	C8.02	DETAILS SHEET 2
25.	C8.03	DETAILS SHEET 3
26.	C8.04	DETAILS SHEET 4

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

APPROVALS

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

ALLEN PAVELKA, PE #9029 — 10-4-17
CITY ENGINEER — DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE 8/31/17 PROJECT NO. 124606
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL
(SHEETS: C1.01, C1.02 and C4.01, C5.02–C5.11, C5.13, C6.03, C6.04, C8.01, C8.04)

LAS VEGAS FIRE & RESCUE — 8/29/17 DATE

N/A
CITY OF LAS VEGAS PLANNING DEPARTMENT — DATE
THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

THE HOWARD HUGHES COMPANY, LLC

N/A
KEVIN ORROCK — DATE
TITLE VICE PRESIDENT

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.

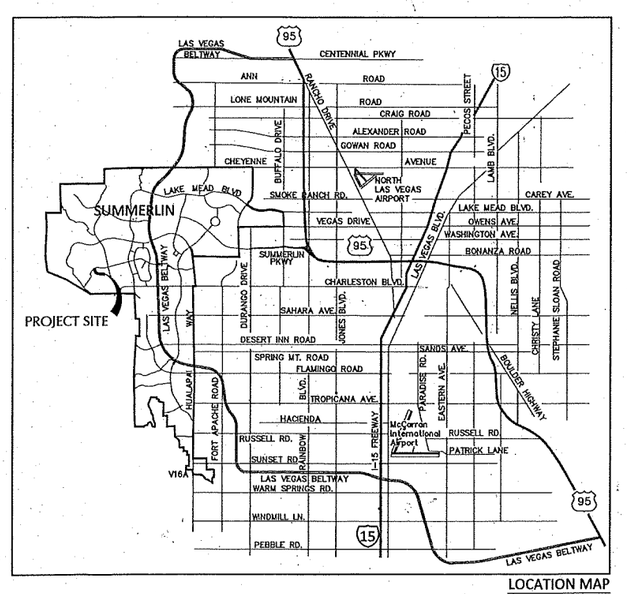
Barbara Garrison — 8-24-17
NV ENERGY — DATE

"THE AFFIXED CENTURYLINK CORPORATION 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."

Shelley Olsen — 8/24/17
CENTRAL TELEPHONE CO. D/B/A CENTURY LINK — DATE

9/12/17
COX COMMUNICATIONS LAS VEGAS, INC. — DATE

9.14.17
SOUTHWEST GAS CORPORATION — DATE
10TV7063



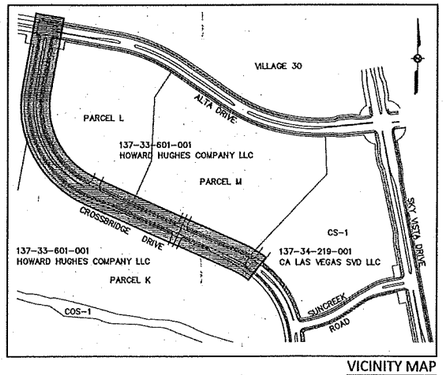
LOCATION MAP
NTS

LEGAL DESCRIPTION

THAT PORTION OF PARCEL 2 AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE LYING WITHIN SECTIONS 33 AND 34, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AND SECTIONS 3 AND 4, TOWNSHIP 21 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA.

OWNER/DEVELOPER

HOWARD HUGHES COMPANY, LLC
10801 CHARLESTON BLVD., 3RD FLOOR
LAS VEGAS, NEVADA 89146
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450



VICINITY MAP
NTS

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES L. YANCEY
Exp. 06-30-19
CIVIL
NO. 016109
8/23/17

IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

COVER SHEET
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

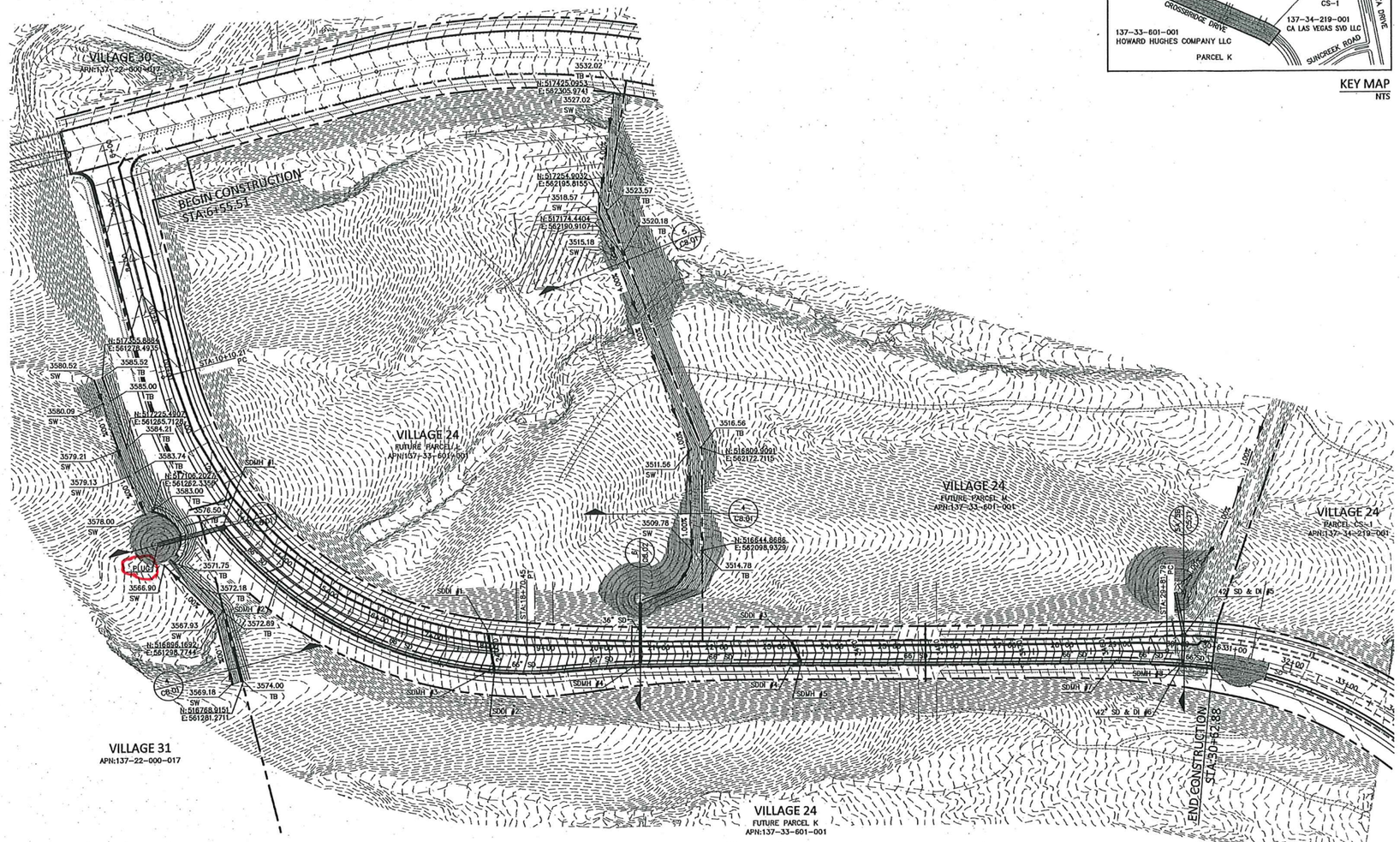
NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	N/A
SHEET NUMBER	C1.01
	SHEET 1 OF 26

PROJ#:124606 AGR:116009 QS:137-33-NE

11652.76

H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-C1.01-CV.DWG 08/23/2017 10:30:16 AM


VILLAGE 30
APN:137-22-000-017
BEGIN CONSTRUCTION
STA:6+55.51
N:517425.0953
E:562305.9741
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TB
3527.02
SW
N:517254.9092
E:562195.8155
3523.57
TB
3518.57
SW
N:517174.4404
E:562190.9107
3520.18
TB
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SW
N:517356.8884
E:561278.4935
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TB
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E:561265.7128
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N:516966.1692
E:561298.7745
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N:516768.9151
E:561281.2711
VILLAGE 24
FUTURE PARCEL L
APN:137-33-601-001
VILLAGE 24
FUTURE PARCEL K
APN:137-33-601-001
VILLAGE 31
APN:137-22-000-017
VILLAGE 24
PARCEL CS-1
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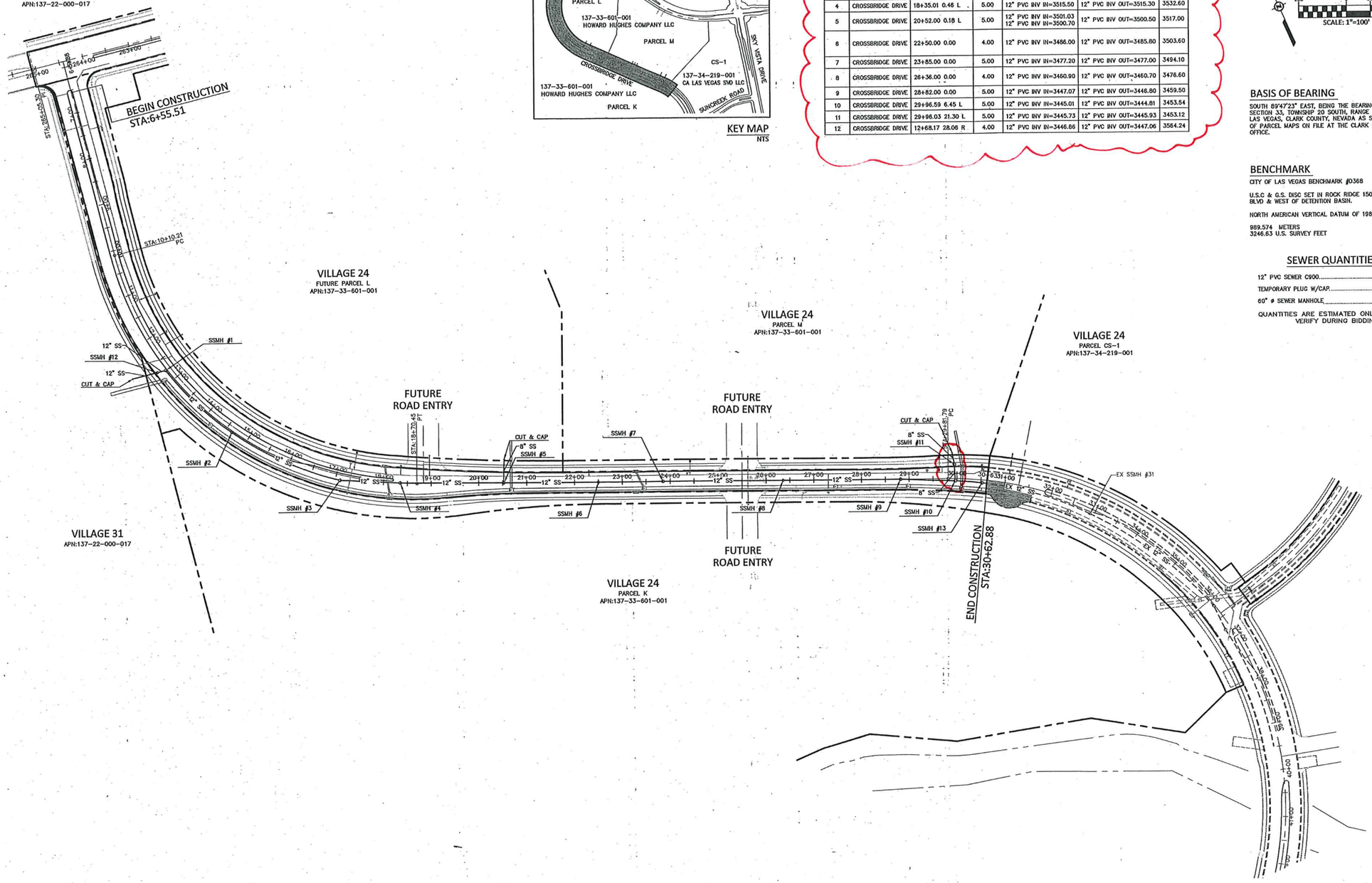

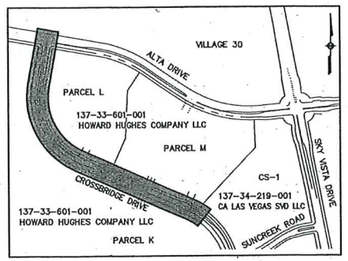

KEY MAP
NTS

SANITARY SEWER MANHOLE TABLE

SSMH#	STREET NAME	STATION & OFFSET	MH SIZE	PIPES IN:	PIPES OUT	RIM
1	CROSSBRIDGE DRIVE	12+75.00 11.50 R	5.00	12" PVC INV IN=3546.63	12" PVC INV OUT=3546.30	3564.40
2	CROSSBRIDGE DRIVE	14+64.14 11.50 R	4.00	12" PVC INV IN=3539.20	12" PVC INV OUT=3539.00	3557.08
3	CROSSBRIDGE DRIVE	17+10.00 11.50 R	5.00	12" PVC INV IN=3523.70	12" PVC INV OUT=3523.50	3541.10
4	CROSSBRIDGE DRIVE	18+35.01 0.46 L	5.00	12" PVC INV IN=3515.50	12" PVC INV OUT=3515.30	3532.60
5	CROSSBRIDGE DRIVE	20+52.00 0.18 L	5.00	12" PVC INV IN=3501.03 12" PVC INV IN=3500.70	12" PVC INV OUT=3500.50	3517.00
6	CROSSBRIDGE DRIVE	22+50.00 0.00	4.00	12" PVC INV IN=3486.00	12" PVC INV OUT=3485.80	3503.60
7	CROSSBRIDGE DRIVE	23+85.00 0.00	5.00	12" PVC INV IN=3477.20	12" PVC INV OUT=3477.00	3494.10
8	CROSSBRIDGE DRIVE	26+36.00 0.00	4.00	12" PVC INV IN=3460.90	12" PVC INV OUT=3460.70	3476.60
9	CROSSBRIDGE DRIVE	28+82.00 0.00	5.00	12" PVC INV IN=3447.07	12" PVC INV OUT=3446.80	3459.50
10	CROSSBRIDGE DRIVE	29+96.59 6.45 L	5.00	12" PVC INV IN=3445.01	12" PVC INV OUT=3444.81	3453.54
11	CROSSBRIDGE DRIVE	29+98.03 21.30 L	5.00	12" PVC INV IN=3445.73	12" PVC INV OUT=3445.93	3453.12
12	CROSSBRIDGE DRIVE	12+68.17 28.06 R	4.00	12" PVC INV IN=3446.86	12" PVC INV OUT=3447.06	3564.24

GRAPHIC SCALE
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SCALE: 1"=100'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #0368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

SEWER QUANTITIES (PUBLIC)

12" PVC SEWER C900	1806 LF
TEMPORARY PLUG W/CAP	3 EA
60" ø SEWER MANHOLE	13 EA

QUANTITIES ARE ESTIMATED ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-385-7011
CLARK COUNTY TRAFFIC OPERATIONS AND SYSTEMS MANAGEMENT
CALL 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED	
(0.00) XXX	0.00 XXX	ELEVATION TAG
		DRAIN INLET
		RETAINING WALL
		SCREEN WALL
		UTILITY POLE
		STREET LIGHT
		POWER LINE/POLE
		TELEPHONE LINE
		WATER LINE
		SANITARY SEWER LINE
		STORM SEWER LINE
		GAS LINE
		STORM MANHOLE
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		REDUCER
		SEWER MANHOLE
		CLEANOUT
		GAS VALVE
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SIGN W/POLE
		SAWCUT LINE
		AREA LIGHT
		WATER METER
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "A" CURB & GUTTER
		30" ROLL CURB
	BWV	BACK WATER VALVE

107V7063

H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-CS.00-UMS.DWG 10/02/2017 03:38:29 PM

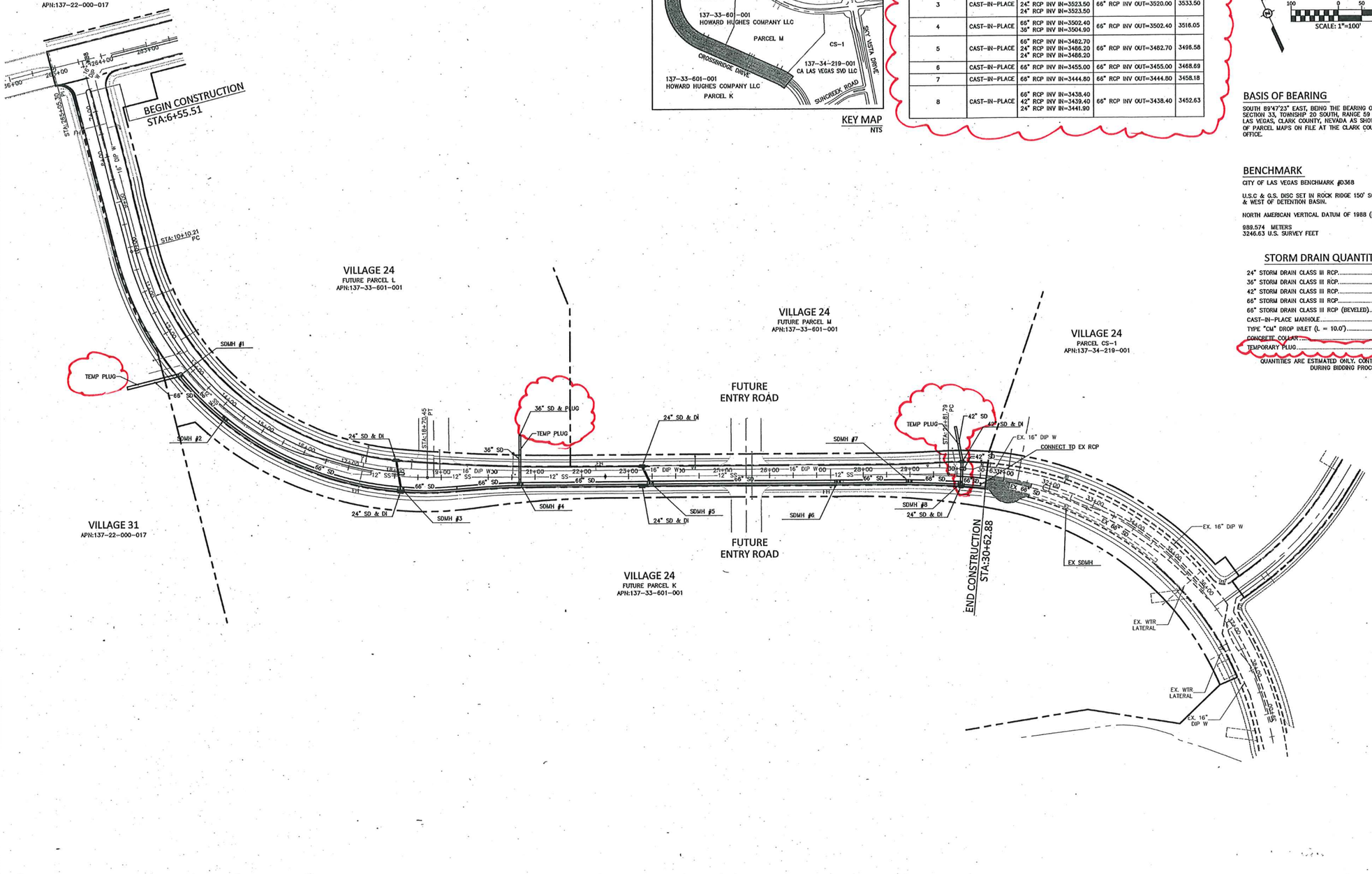
COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

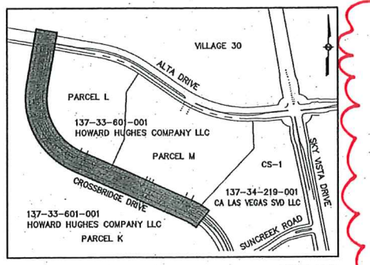
PROFESSIONAL ENGINEER — STATE OF NEVADA
JAMES A. YANCEY
EXP. 06/30/18
CIVIL
NO. 01 8109
10/2/17

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
SEWER MASTER PLAN
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=100
SHEET NUMBER C5.00
SHEET 5 OF 26
H65276





KEY MAP
NTS

STORM DRAIN MANHOLE TABLE

SDMH#	MH TYPE	PIPES IN:	PIPES OUT	RIM
1	CAST-IN-PLACE	66" RCP INV IN=3550.00	66" RCP INV OUT=3550.00	3563.72
2	CAST-IN-PLACE	66" RCP INV IN=3546.30	66" RCP INV OUT=3546.30	3558.94
3	CAST-IN-PLACE	66" RCP INV IN=3520.00 24" RCP INV IN=3523.50 24" RCP INV IN=3523.50	66" RCP INV OUT=3520.00	3533.50
4	CAST-IN-PLACE	66" RCP INV IN=3502.40 36" RCP INV IN=3504.90	66" RCP INV OUT=3502.40	3516.05
5	CAST-IN-PLACE	66" RCP INV IN=3482.70 24" RCP INV IN=3486.20 24" RCP INV IN=3486.20	66" RCP INV OUT=3482.70	3498.58
6	CAST-IN-PLACE	66" RCP INV IN=3455.00	66" RCP INV OUT=3455.00	3468.69
7	CAST-IN-PLACE	66" RCP INV IN=3444.80	66" RCP INV OUT=3444.80	3458.18
8	CAST-IN-PLACE	66" RCP INV IN=3438.40 42" RCP INV IN=3439.40 24" RCP INV IN=3441.90	66" RCP INV OUT=3438.40	3452.63

GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

STORM DRAIN QUANTITIES (PUBLIC)

24" STORM DRAIN CLASS III RCP	131	LF
36" STORM DRAIN CLASS III RCP	105	LF
42" STORM DRAIN CLASS III RCP	122	LF
66" STORM DRAIN CLASS III RCP	797	LF
66" STORM DRAIN CLASS III RCP (BEVELED)	1009	LF
CAST-IN-PLACE MANHOLE	8	EA
TYPE "CM" DROP INLET (L = 10.0')	6	EA
CONCRETE COLLAR	1	EA
TEMPORARY PLUG	3	EA

QUANTITIES ARE ESTIMATED ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811 or 1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511 CLARK COUNTY TRAFFIC SIGNALS AND CALL 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

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LEGEND

EXISTING	PROPOSED	
(0.00)	0.00	ELEVATION TAG
XXX	XXX	
		DRAIN INLET
		RETAINING WALL
		SCREEN WALL
		UTILITY POLE
		STREET LIGHT
--E#--	—E#—	POWER LINE/POLE
--T--	—T—	TELEPHONE LINE
--W--	—W—	WATER LINE
--SS--	—SS—	SANITARY SEWER LINE
--D--	—D—	STORM SEWER LINE
--G--	—G—	GAS LINE
(D)	(D)	STORM MANHOLE
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		REDUCER
(S)	(S)	SEWER MANHOLE
		CLEANOUT
		GAS VALVE
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SIGN W/POLE
		SAWCUT LINE
		AREA LIGHT
		WATER METER
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
	(BW)	BACK WATER VALVE

107V7063

COLLINS ENGINEERS, INC.
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LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-18
CIVIL
NO. 01 6109

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC APN: 137-33-601-001

STORM DRAIN MASTER PLAN
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=100

SHEET NUMBER
C5.01
SHEET 6 OF 26

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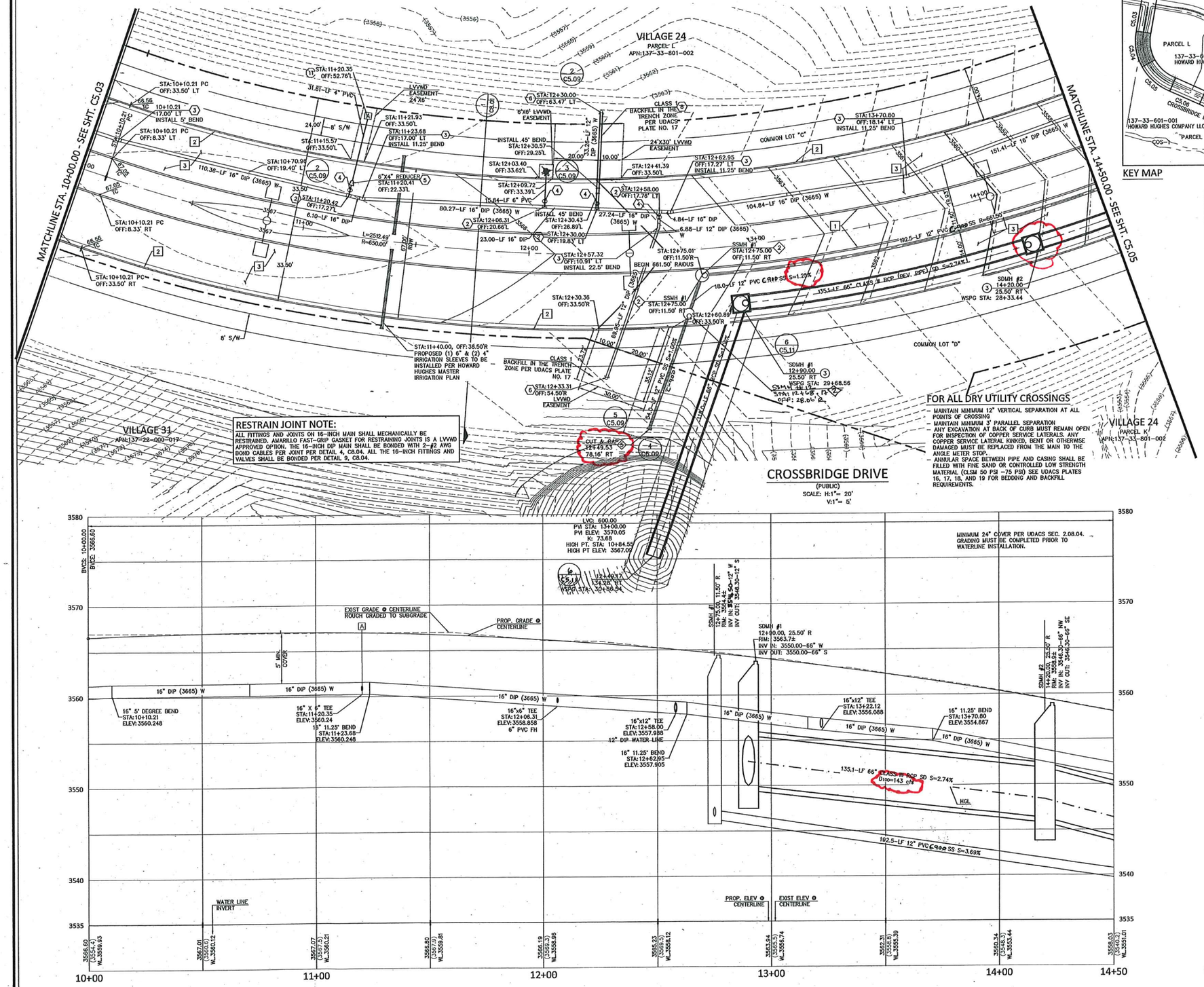

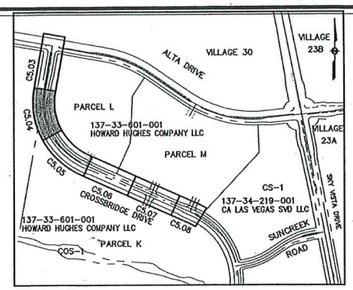

KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW-OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS I BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	~~INSTALL 48" SEWER MANHOLE WITH SINGLE LID~~ NOT USED
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
3	~~INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID~~
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST-IN-PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	NOT USED
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"-24")

DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH-ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: 8/31/17 PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS INC
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-18
CIVIL
NO. 16109

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY PLAN & PROFILE
STA. 10+00.00 TO 14+50.00
SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DESCRIPTION	DATE	DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.04
107V7063
SHEET 9 OF 26
H45276

PROJ#:124806 AGR:116009 QS:137-33-NE

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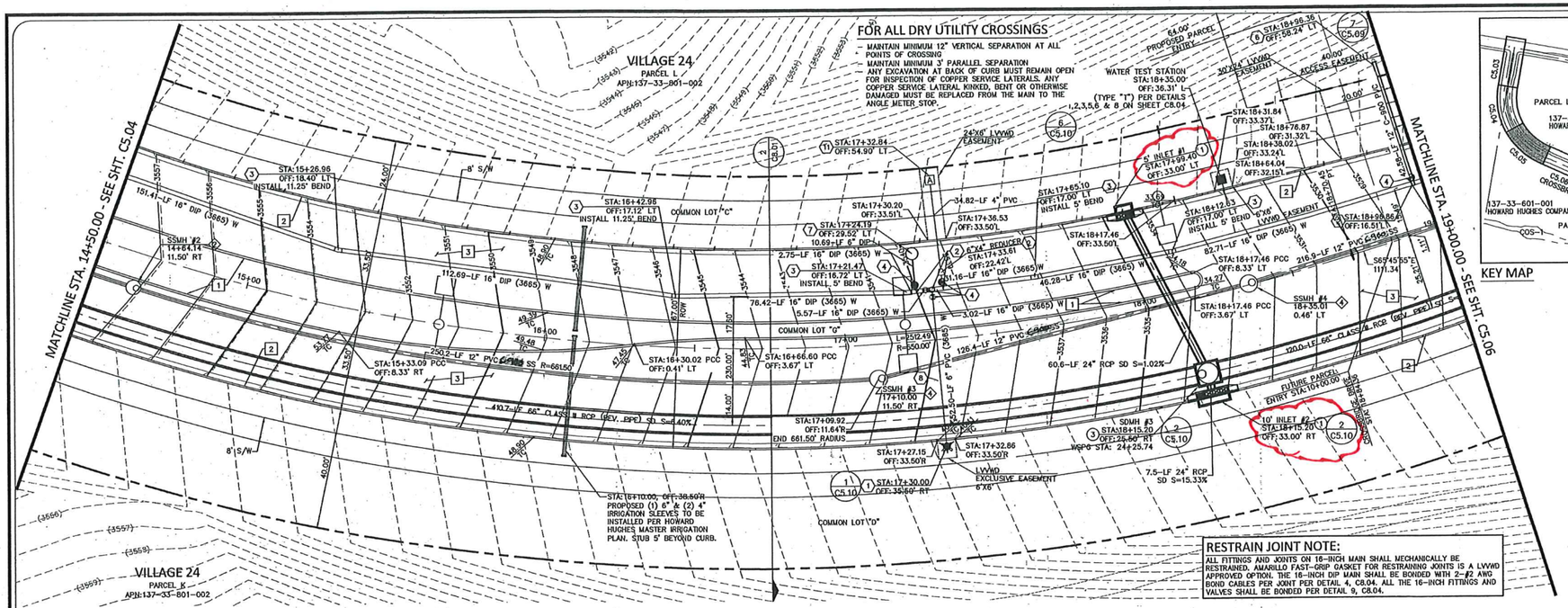

RESTRAIN JOINT NOTE:

ALL FITTINGS AND JOINTS ON 16-INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST-GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16-INCH DIP MAIN SHALL BE BONDED WITH 2-#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16-INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

CONSTRUCTION NOTES:

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1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
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WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

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3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
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13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)

* SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

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STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
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4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	NOT USED
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

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WATER MAIN JOINT DEFLECTION (DIP, 14'-24')

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE 8/31/17 PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

CROSSBRIDGE DRIVE

(PUBLIC)
SCALE: H:1"= 20'
V:1"= 5'

LVC: 600.00
PVI STA: 13+00.00
PVI ELEV: 3570.05
K: 73.68

EXCS: 16+00.00 ELEV: 3549.06

MINIMUM 24" COVER PER UDACS SEC. 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

EXIST GRADE ℄ CENTERLINE ROUGH GRADED TO SUBGRADE
PROP. GRADE ℄ CENTERLINE
16" 11.25° BEND STA:15+26.96 ELEV:3547.270
16" DIP (3685) W
HGL
192.5-LF 12" PVC C-900 SS S=4.68%
SSMH #2 14+64.14 11.50' RT RIM: 3557.11 INV IN: 3539.20-12" NW INV OUT: 3539.00-12" SE
410.7-LF 66" CLASS III RCP SD S=8.40% D100=143 cfs
250.2-LF 12" PVC C-900 SS S=6.11%
16" 11.25° BEND STA:16+42.98 ELEV:3539.006
5' MIN. COVER
SSMH #3 17+10.00 11.50' RT RIM: 3541.12 INV IN: 3522.70-24" NW INV OUT: 3523.50-12" SE
BG
A
16" 5° BEND STA:17+21.47 ELEV:3533.657
7.00%
PROP. GRADE ℄ CENTERLINE
16"x6" TEE STA:17+24.10 ELEV:3533.477
16" GATE VALVE STA:17+27.71 ELEV:3533.231
1.78
16"x6" TEE STA:17+32.84 ELEV:3532.881
16"x16" TEE FH STA:17+30.00 ELEV:3533.492
16" 5° BEND STA:17+65.10 ELEV:3530.682
16" 5° BEND STA:18+12.63 ELEV:3527.443
SSMH #3 18+15.20 25.50' R RIM: 3535.0 INV IN: 3520.00-66" NW INV IN: 3522.50-24" N INV IN: 3520.00-66" SE INV OUT: 3520.00-66" S
SSMH #4 18+35.01 0.46' L RIM: 3532.04 INV IN: 3515.50-12" NW INV OUT: 3515.30-12" SE
16"x12" TEE STA:18+98.86 ELEV:3521.747
HGL
120.0-LF 66" ASTM C76 CL III (350 D-LOAD) RCP SD IN 6000 PSI MIN. WITH 1"-SACRIFICIAL CONCRETE Q100 =150.7 cfs
STA: 19+00.0 CONTINUED NEXT SHEET
PROP. ELEV ℄ CENTERLINE
EXIST ELEV ℄ CENTERLINE
372.29' INSTALL RESTRAINED JOINTS ON 16" W.L.
216.9-LF 12" PVC C-900 SS S=6.33%
WATER LINE INVERT
3560
3550
3540
3530
3520
3510
3558.03 (3540.2) WL:3551.01
3556.38 (3538.8) WL:3548.58
3553.39 (3536.8) WL:3545.63
3549.06 (3535.7) WL:3542.07
3545.56 (3536.7) WL:3538.53
3542.06 (3536.7) WL:3535.12
3538.57 (3535.0) WL:3531.71
3535.07 (3534.7) WL:3528.30
3531.57 (3534.4) WL:3524.90
3528.07 (3534.6) WL:3521.54
14+50
15+00
16+00
17+00
18+00
19+00

H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-CS-03-UTILS.DWG 08/10/2017 11:46:59 AM

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES A. YANNEY
EXP. 06-30-18
CIVIL
NO. 016109

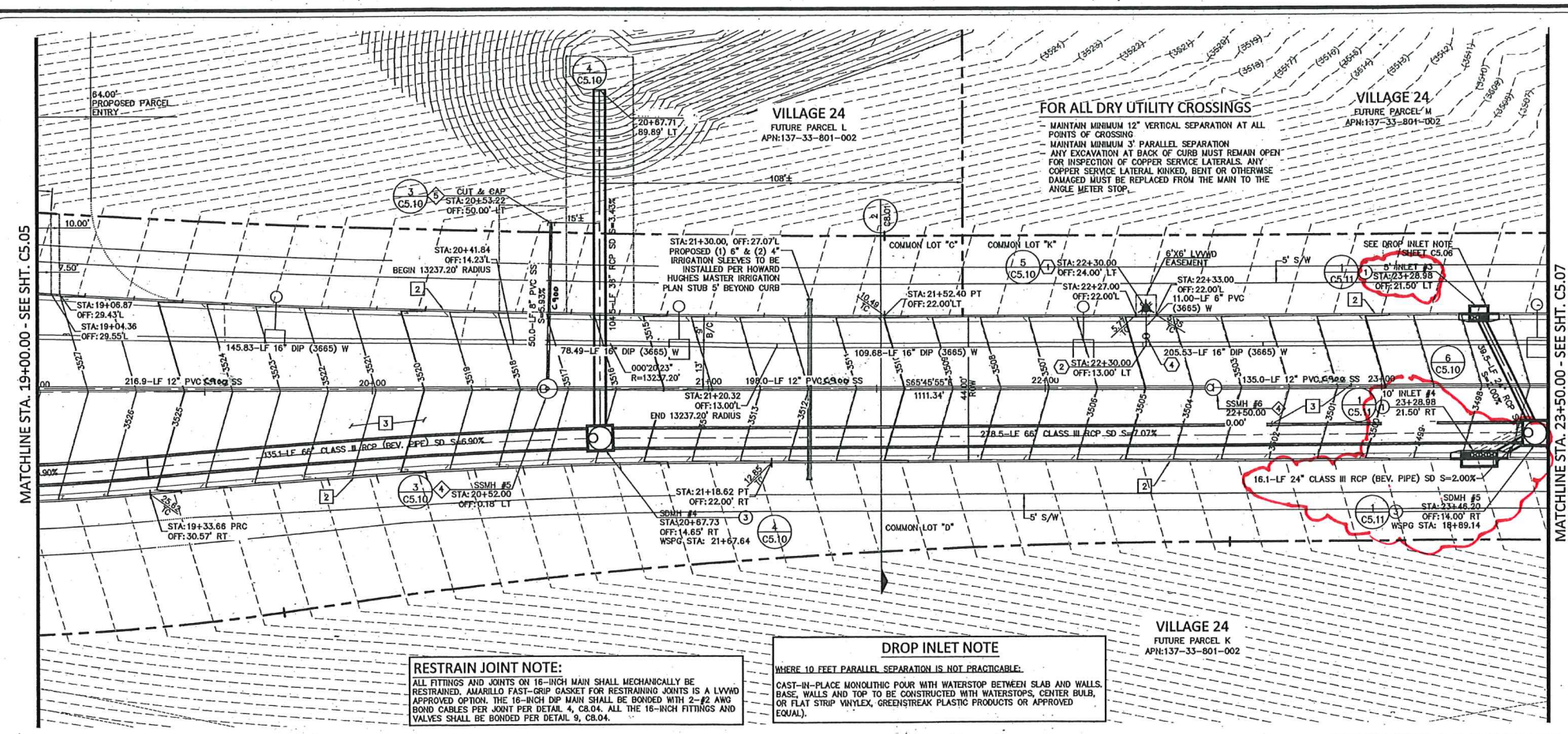
IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

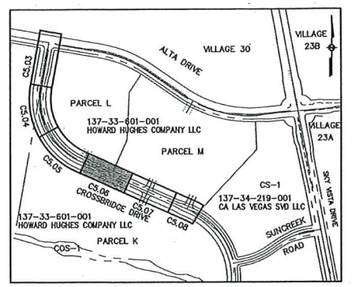
APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 14+50.00 TO 19+00.00
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.05
107V7063
SHEET 10 OF 26
H46276

PROJ#:124806 AGR:116009 QS:137-33-NE



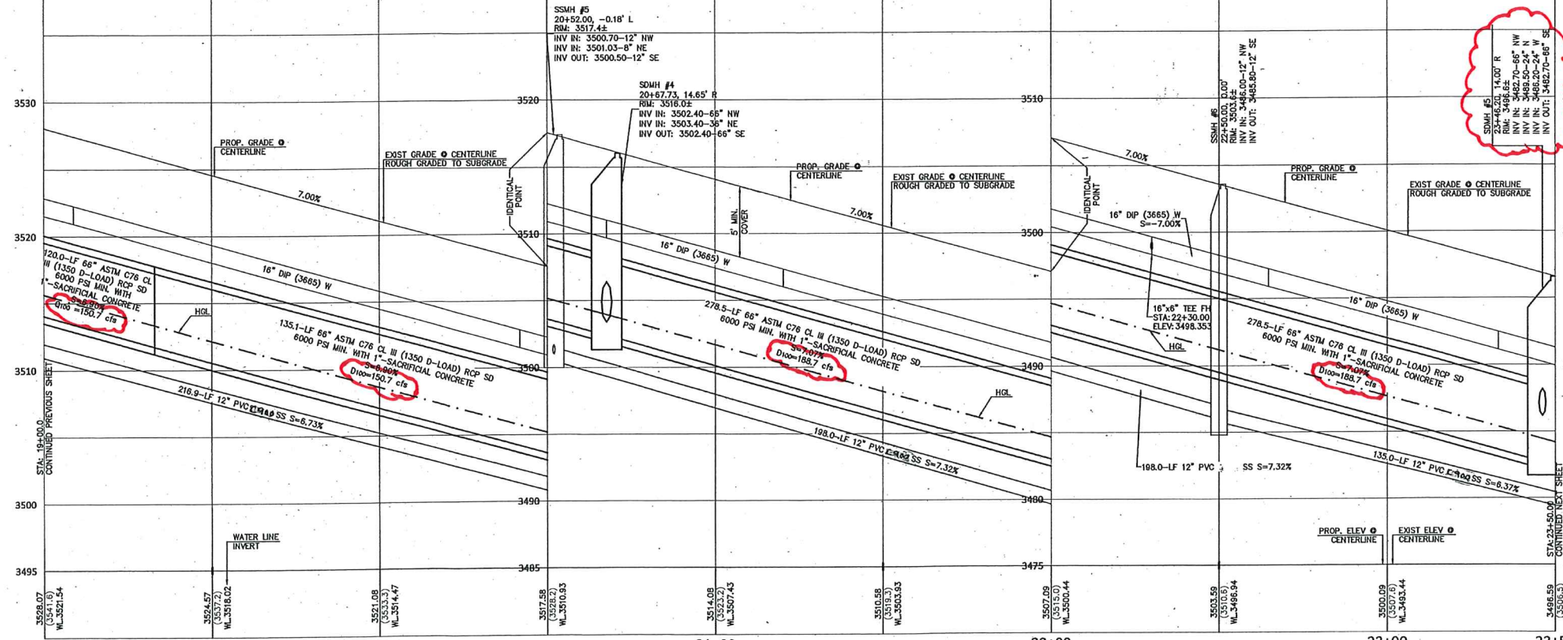


KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'

CROSSBRIDGE DRIVE
(PUBLIC)
SCALE: H:1"= 20'
V:1"= 5'

MINIMUM 24" COVER PER UDACS SEC. 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.



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CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∆) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW–OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE+PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
~~1~~	~~INSTALL 48" SEWER MANHOLE WITH SINGLE LID~~ NOT USED
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
~~3~~	~~INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID~~
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST–IN–PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∆)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	NOT USED
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:
ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"–24")
DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH–ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17 PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

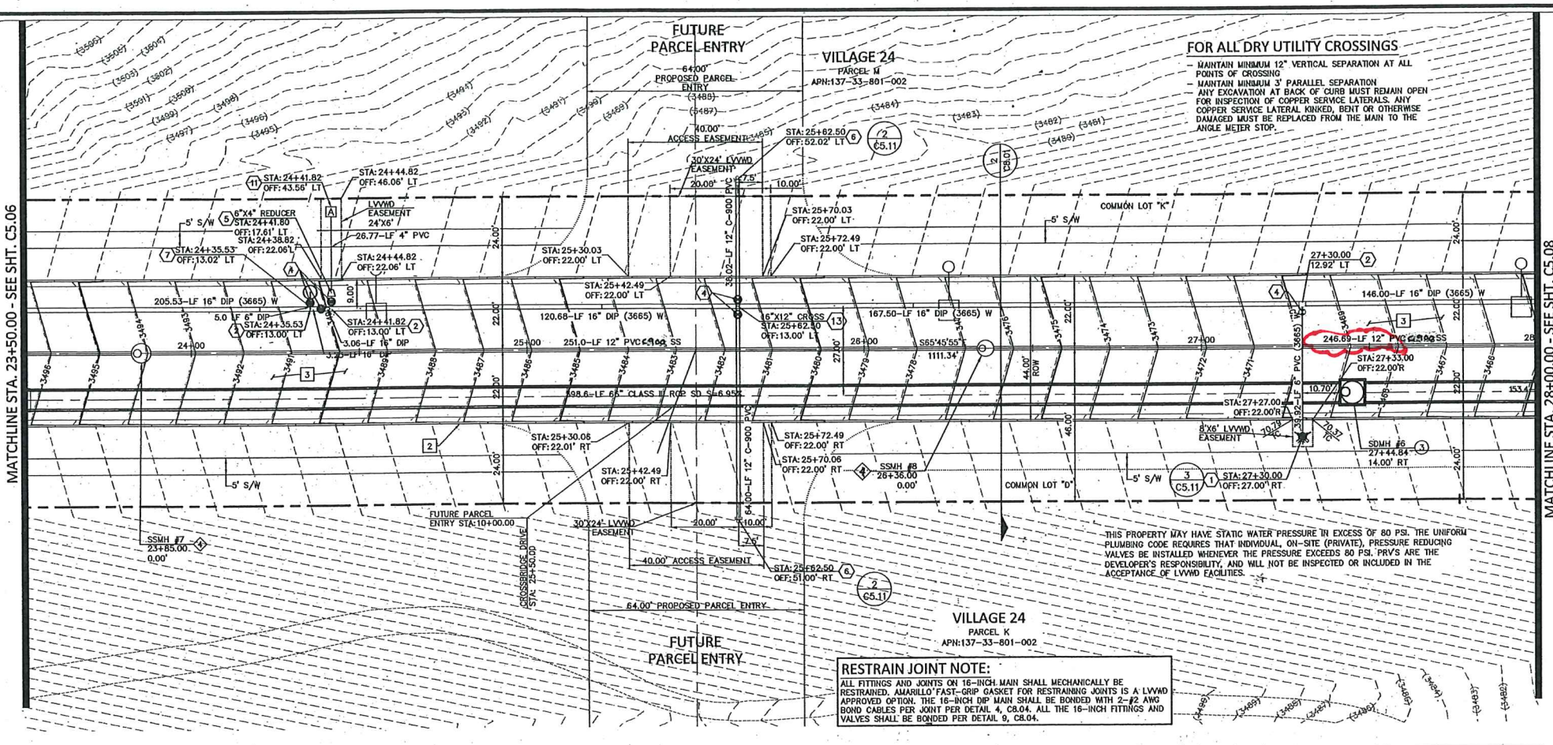
PROFESSIONAL ENGINEER – STATE OF NEVADA – JAMES M. YANCEY – EXP. 06-30-18 – CIVIL – NO. 01 9109 – 7/13/18

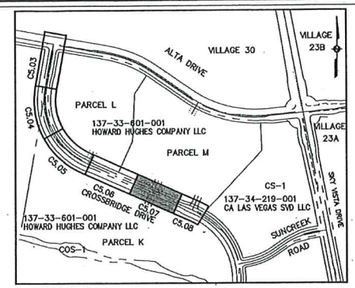
IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 19+00.00 TO 23+50.00
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.06
127V7063
SHEET 11 OF: 26
H05276

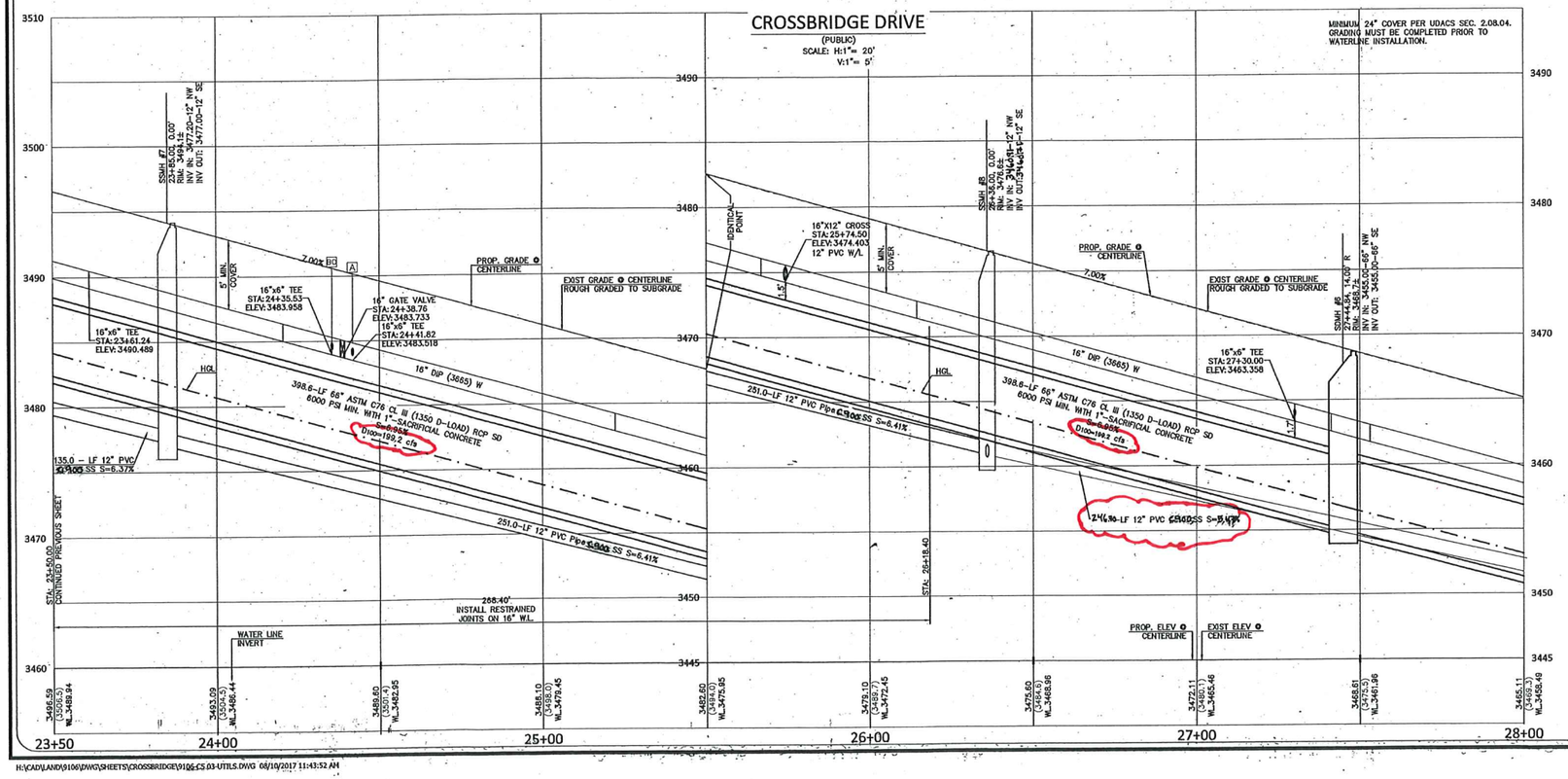
PROJ.#:124806 AGR:116009 QS:137-33-NE





KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'



CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW-OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	~~INSTALL 48" SEWER MANHOLE WITH SINGLE LID~~ NOT USED
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
3	~~INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID~~
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST-IN-PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	~~NOT USED~~
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

** CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"-24")

DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH-ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17 PROJECT NO: 124806
LVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS, INC.
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER — JAMES A. YAMDEZ — EXP. 06-30-18 — CIVIL — NO. 016709 — STATE OF NEVADA

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

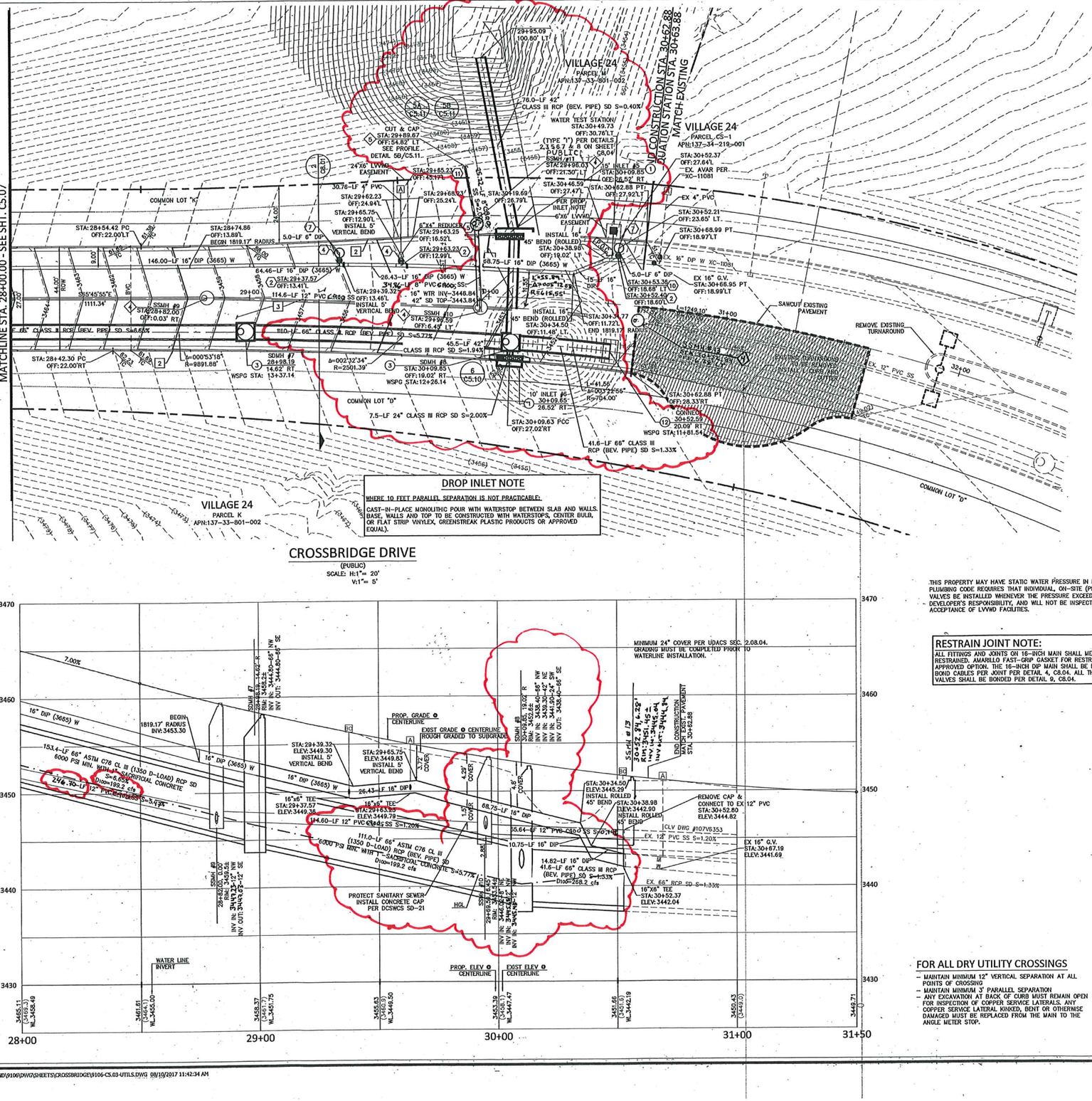
APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 23+50.00 TO 28+00.00
4" PVC SUMMERLIN VILLAGE 24 CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

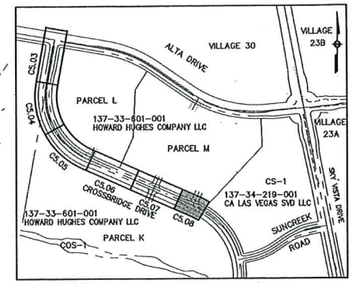
NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.07
107V7065
SHEET 12 OF 26
H165270

PROJ#:124806 AGR:116009 QS:137-33-NE

H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-C5.03-UTILS.DWG 08/10/2017 11:43:52 AM





KEY MAP

GRAPHIC SCALE

SCALE: 1"=20'

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
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8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
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12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
◇1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
◇2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
◇3	INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
◇4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
◇5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
◇6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
◇7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST-IN-PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE**
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	NOT USED
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

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WATER MAIN JOINT DEFLECTION (DIP, 14"-24")

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: 8/31/17 PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

THIS PROPERTY MAY HAVE STATIC WATER PRESSURE IN EXCESS OF 80 PSI. THE UNIFORM PLUMBING CODE REQUIRES THAT INDIVIDUAL, ON-SITE (PRIVATE), PRESSURE REDUCING VALVES BE INSTALLED WHENEVER THE PRESSURE EXCEEDS 80 PSI. PRV'S ARE THE DEVELOPER'S RESPONSIBILITY, AND WILL NOT BE INSPECTED OR INCLUDED IN THE ACCEPTANCE OF LVVWD FACILITIES.

RESTRAIN JOINT NOTE:

ALL FITTINGS AND JOINTS ON 16-INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST-GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16-INCH DIP MAIN SHALL BE BONDED WITH 2-#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16-INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

FOR ALL DRY UTILITY CROSSINGS

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

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA JAMES A. YANCEY No. 01 6109 CIVIL Dt. 6-30-18

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY PLAN & PROFILE

STA. 28+00.00 TO 30+63.00

SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3

CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106

DESIGN BY: J. SALDIVAR

DRAWN BY: J. SALDIVAR

CHECKED BY: K. YAMADA

DATE: 04/2017

SCALE: 1" = 20'

SHEET NUMBER C5.08

107V7063

SHEET 13 OF 26

H65276

PROJ#:124806 AGR:116009 QS:137-33-NE

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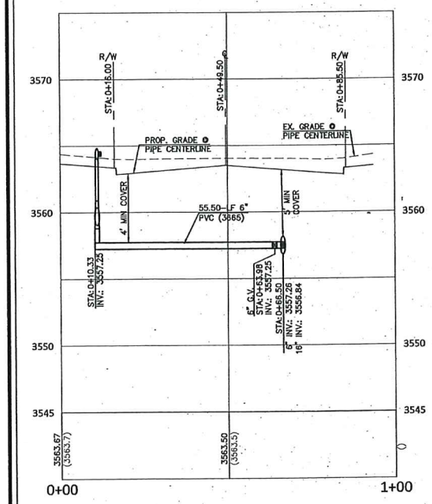
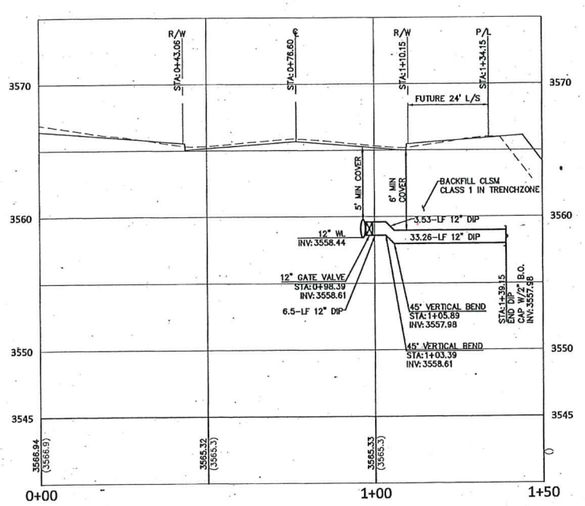


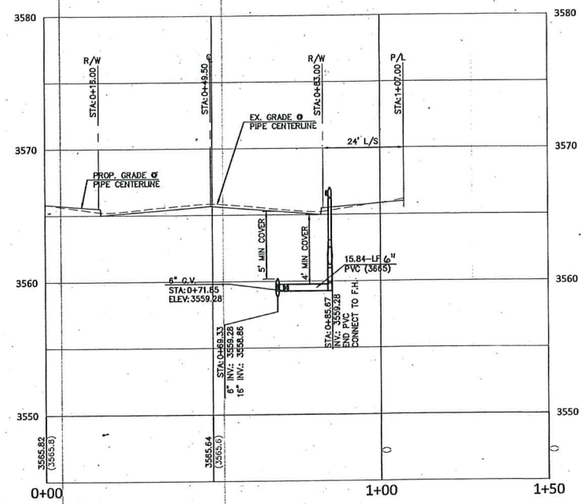
1 C5.09 F.H. LATERAL - STA: 7+30.00 (REF. SHEET C5.03)

PROFILE VIEW H: 1"=20' V: 1"=5'



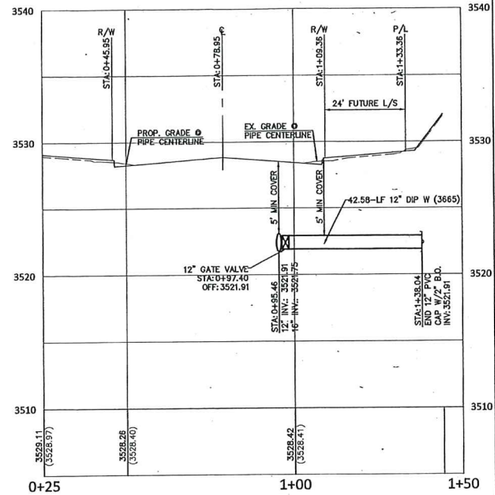
2 C5.09 12" WATER LATERAL - STA: 12+30.00 (REF. SHEET C5.04)

PROFILE VIEW H: 1"=20' V: 1"=5'



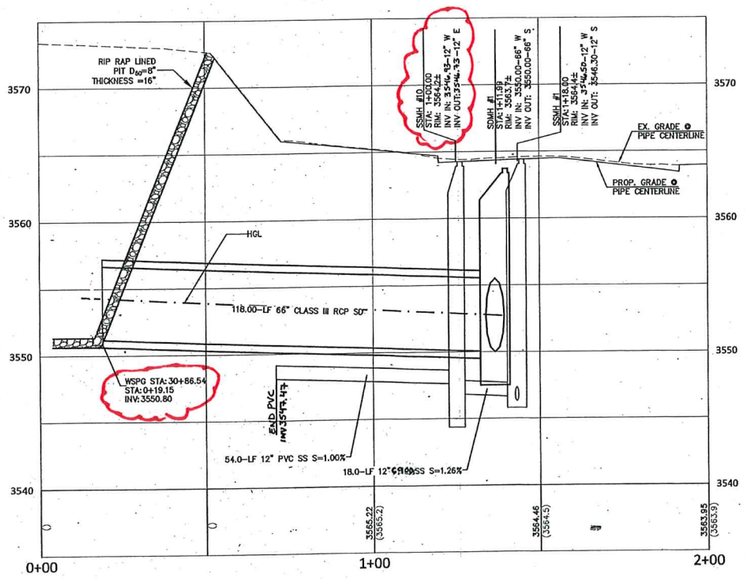
3 C5.09 F.H. LATERAL - STA: 12+06.31 (REF. SHEET C5.04)

PROFILE VIEW H: 1"=20' V: 1"=5'



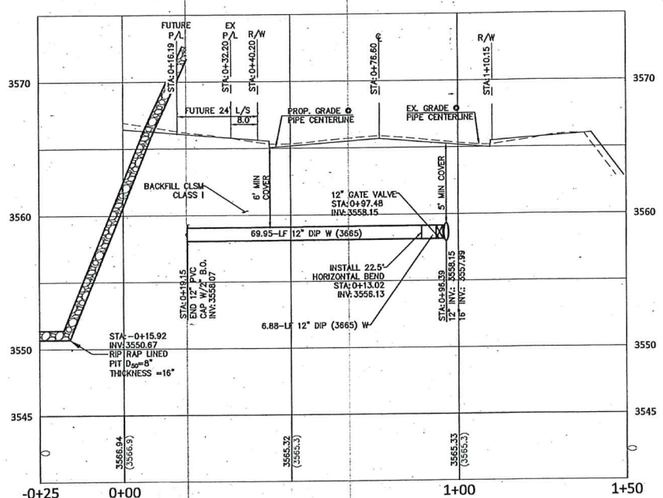
7 C5.09 12" WATER LATERAL - STA: 18+96.38 (REF. SHEET C5.05)

PROFILE VIEW H: 1"=20' V: 1"=5'



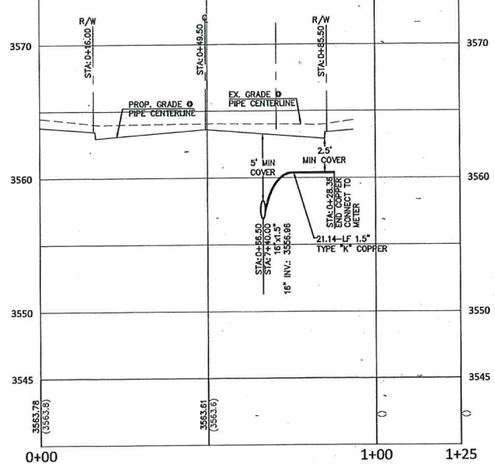
4 C5.09 SSMH #1 - STA: 12+75.00 (REF. SHEET C5.04)

PROFILE VIEW H: 1"=20' V: 1"=5'



5 C5.09 12" WATER LATERAL - STA: 12+58.00 (REF. SHEET C5.04)

PROFILE VIEW H: 1"=20' V: 1"=5'



6 C5.09 TYPE "K" COPPER - STA: 7+40.00 (REF. SHEET C5.03)

PROFILE VIEW H: 1"=20' V: 1"=5'

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: 8/31/17 PROJECT NO: 124805

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER | STATE OF NEVADA | JAMES A. YANEZY | EXP. 06-30-19 | CIVIL | NO. 01 61 09 | LICENSED

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY LATERALS 1

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106

DESIGN BY: J. SALDIVAR

DRAWN BY: J. SALDIVAR

CHECKED BY: K. YAMADA

DATE: 04/2017

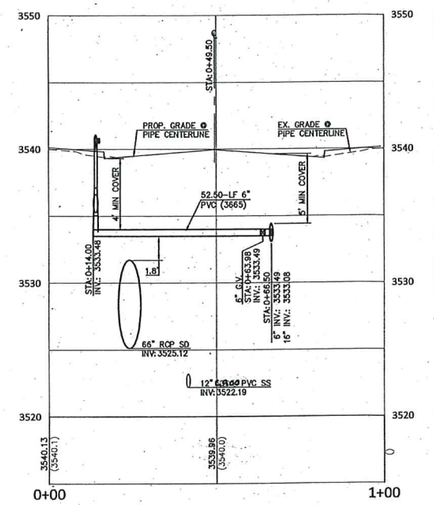
SCALE:

SHEET NUMBER C5.09 (107 of 963) SHEET 14 OF 26

H05276

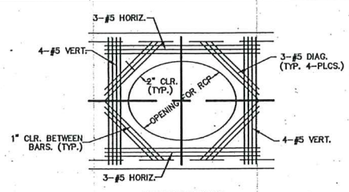
PRO.#:124806 AGR:116009 QS:137-33-NE

H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-C5.09-SDLATS.DWG 08/10/2017 12:00:14 PM

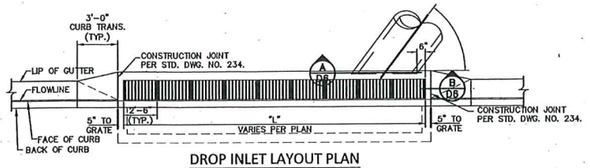


1 C5.10 — F.H. LATERAL - STA: 17+30.00 (REF. SHEET C5.05)

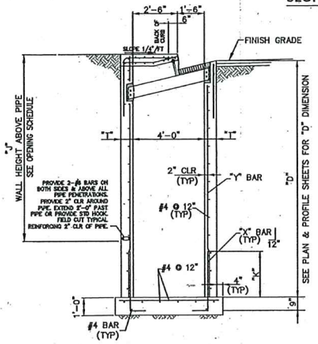
PROFILE VIEW
H: 1"=20'
V: 1"=5'



SECTION "A"

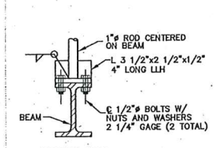


DROP INLET LAYOUT PLAN

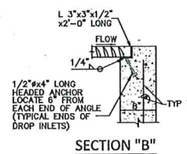


DIMENSIONS "D"	"T"	"K"	"X" BARS	"Y" BARS
D ≤ 7'-0"	8"	2'-0"	#4 @ 12"	#4 @ 12"
7'-0" < D ≤ 9'-0"	8"	2'-6"	#5 @ 12"	#5 @ 12"
9'-0" < D ≤ 10'-6"	8"	2'-6"	#5 @ 6"	#5 @ 8"
10'-6" < D ≤ 13'-3"	10"	2'-6"	#5 @ 4"	#5 @ 4"
13'-3" < D ≤ 14'-6"	12"	3'-0"	#6 @ 4"	#6 @ 4"

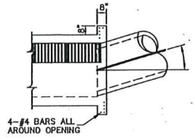
TYPICAL CATCH BASIN SECTION
NOT TO SCALE



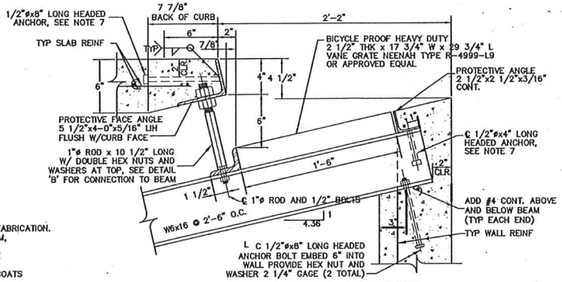
DETAIL "B"



SECTION "B"



ALTERNATE CONNECTION DETAIL

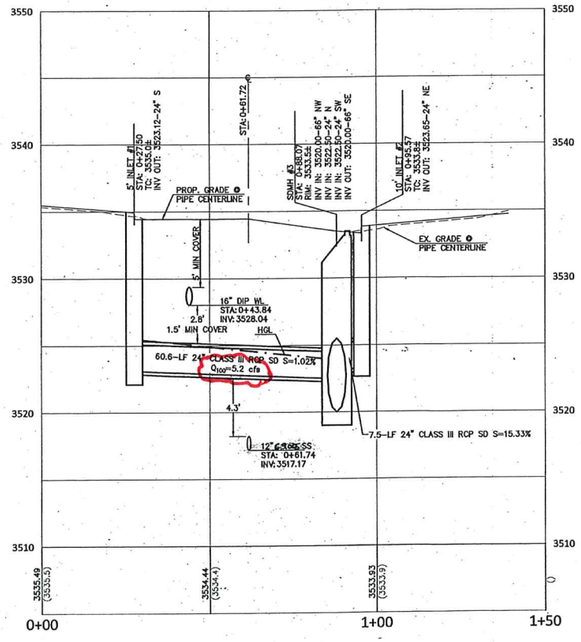


PROTECTIVE FACE & ROD - DETAIL "A"

NOTES:

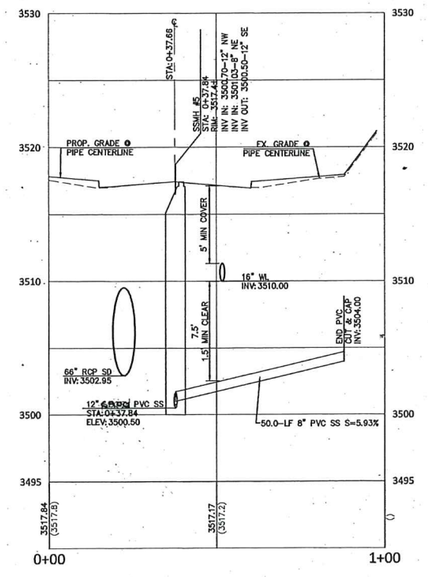
1. ALL EXPOSED METALS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. PROVIDE 1/2" (MIN.) CLEARANCE ALL AROUND THE STEEL BEAM, DRY PACK AFTER INSTALLATION.
3. WHEN REQUIRED BY LENGTH OF OPENING, PLATE ANGLE MAYBE DELIVERED IN SECTIONS AND BUTT WELDED IN PLACE.
4. ALL GALVANIZING DAMAGED BY WELDING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

6 C5.10 — DROP INLET DETAIL
NTS



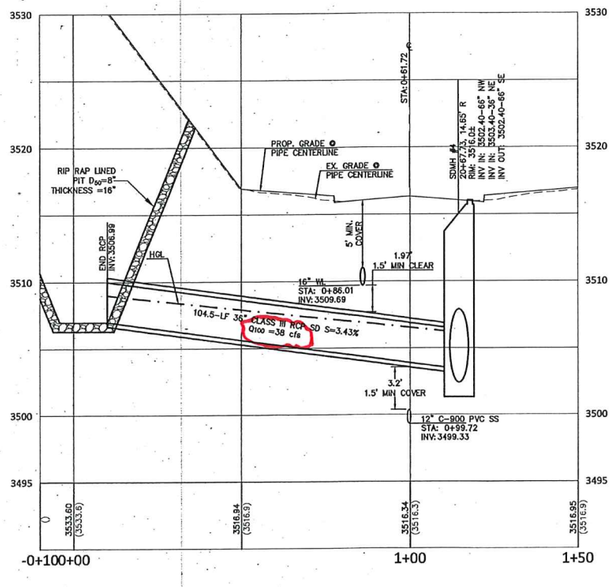
2 C5.10 — SDMH #3 - STA: 18+15.20 (REF. SHEET C5.05)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



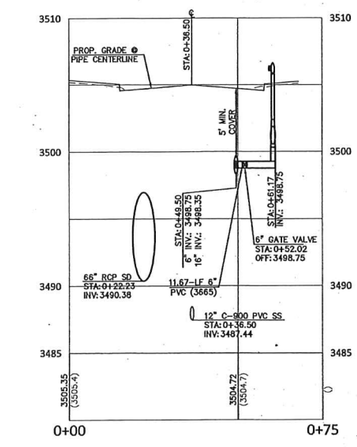
3 C5.10 — SSMH #5 - STA:20+52.00 (REF. SHEET C5.06)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



4 C5.10 — SDMH #4 - STA:20+67.73 (REF. SHEET C5.06)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



5 C5.10 — F.H. LATERAL - STA:22+30.00 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'

DROP INLET NOTE
WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (MNYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17 PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsener.com

PROFESSIONAL ENGINEER STATE OF NEVADA JAMES A. YANCEY EXP. 06-30-18 CIVIL NO. 016109

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY LATERALS 2

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DESCRIPTION	DATE	DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C5.10
107V7053
SHEET 15 OF 26

H052776

PROJ#:124806 AGR:116009 QS:137-33-NE

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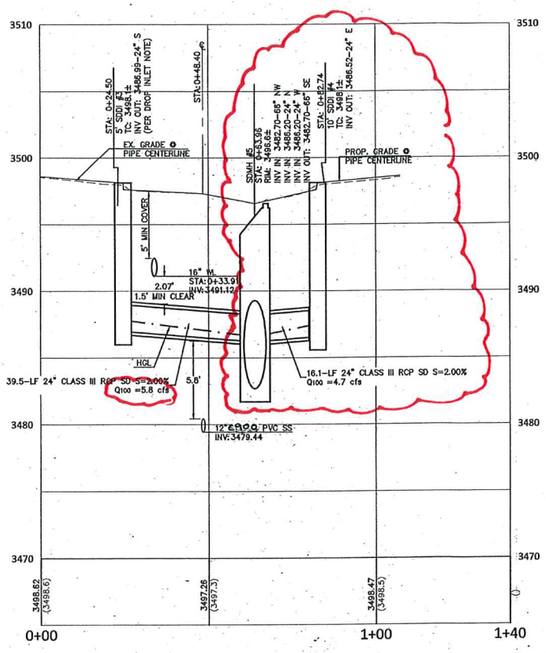
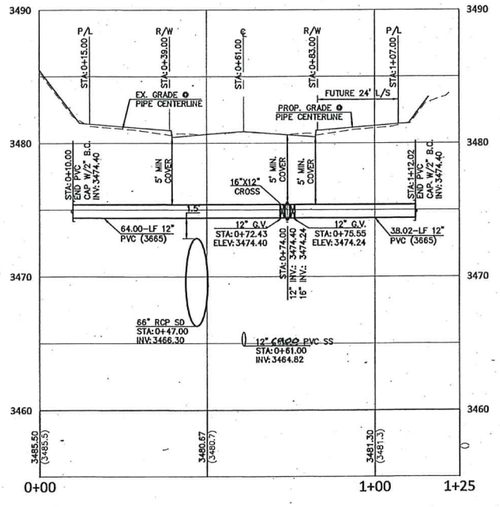


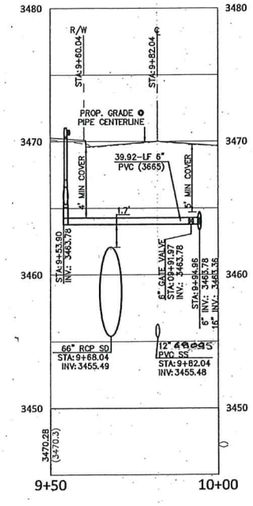
1 C5.11 — SDMH #5 - STA:23+46.20 (REF. SHEET C8.03)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



2 C5.11 — 12" WATER LATERAL - STA: 25+62.50 (REF. SHEET C5.07)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



3 C5.11 — F.H. LATERAL - STA: 27+30.00 (REF. SHEET C5.07)

PROFILE VIEW
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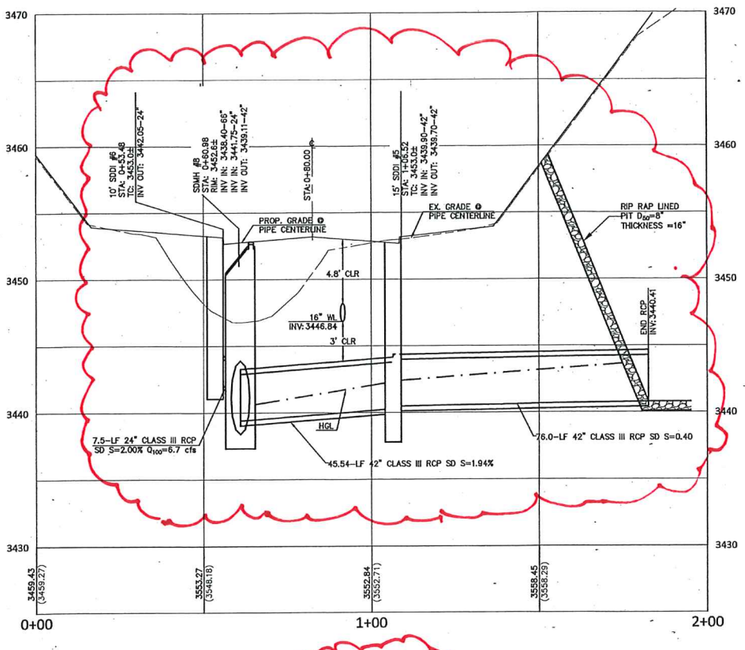
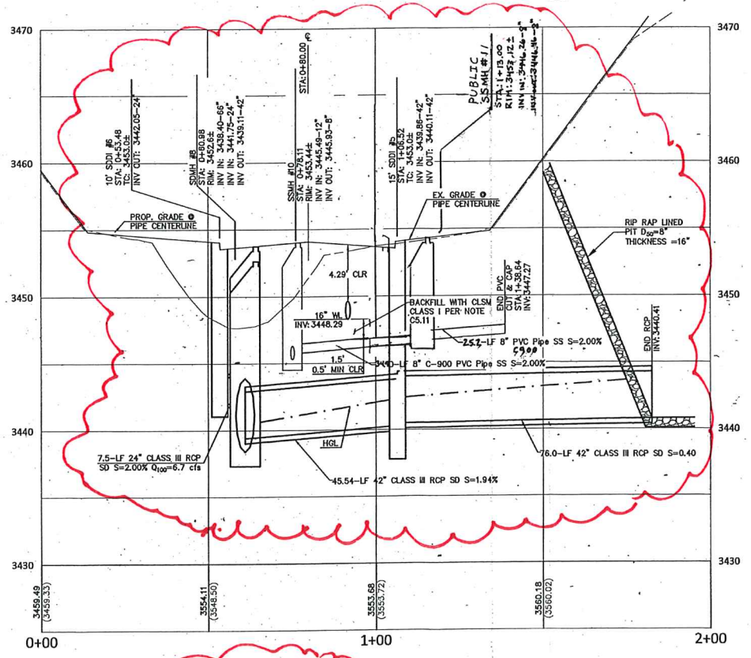
V: 1"=5'



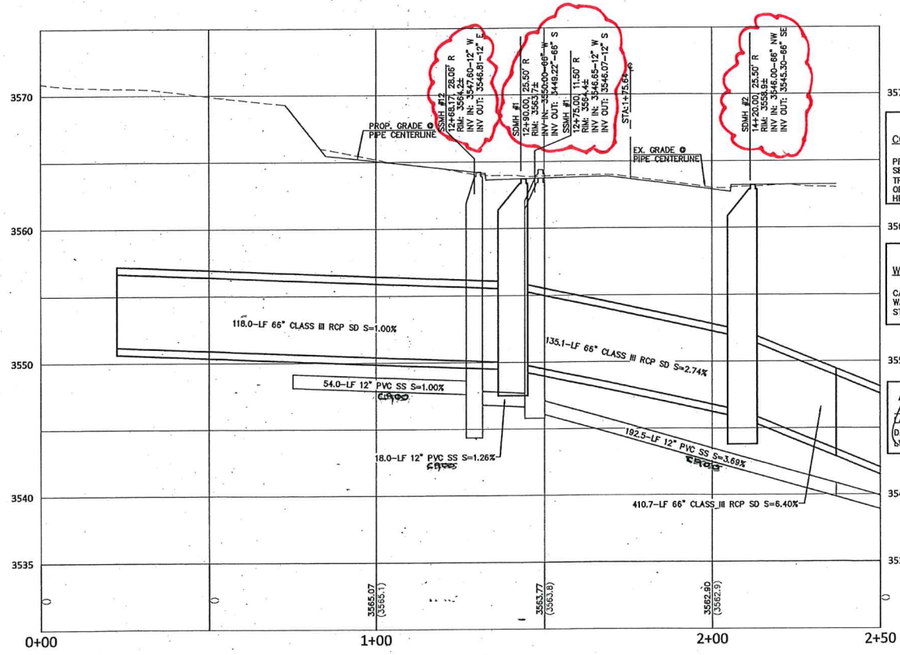
5A C5.11 — SDMH 8 - STA: 29+96.59 WITHOUT SS (REF. SHEET C5.08)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



5B C5.11 — SSMH #10 - STA: 29+96.59 (REF. SHEET C5.08)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



6 C5.11 — SDMH 1 - STA: 12+49.17 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'

CONTROLLED LOW STRENGTH MATERIAL (CLSM)

PROTECT WATERLINES IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I CONTROLLED LOW STRENGTH MATERIAL (CLSM) TO THE SPRINGLINE OF THE WATERLINE. THIS REQUIREMENT IS FOR STRUCTURAL SUPPORT ONLY. ADDITIONAL HEALTH REGULATIONS MAY APPLY PER UDACS 2.22

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: 8/31/17 PROJECT NO: 124806

1,000 APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER – STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-17
CIVIL
NO. 01 61 09

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY LATERALS 2

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:
SHEET NUMBER: C5.11
107V7063
SHEET 16 OF 26
H-65276

PROJ#:124806 AGR:116009 QS:137-33-NE

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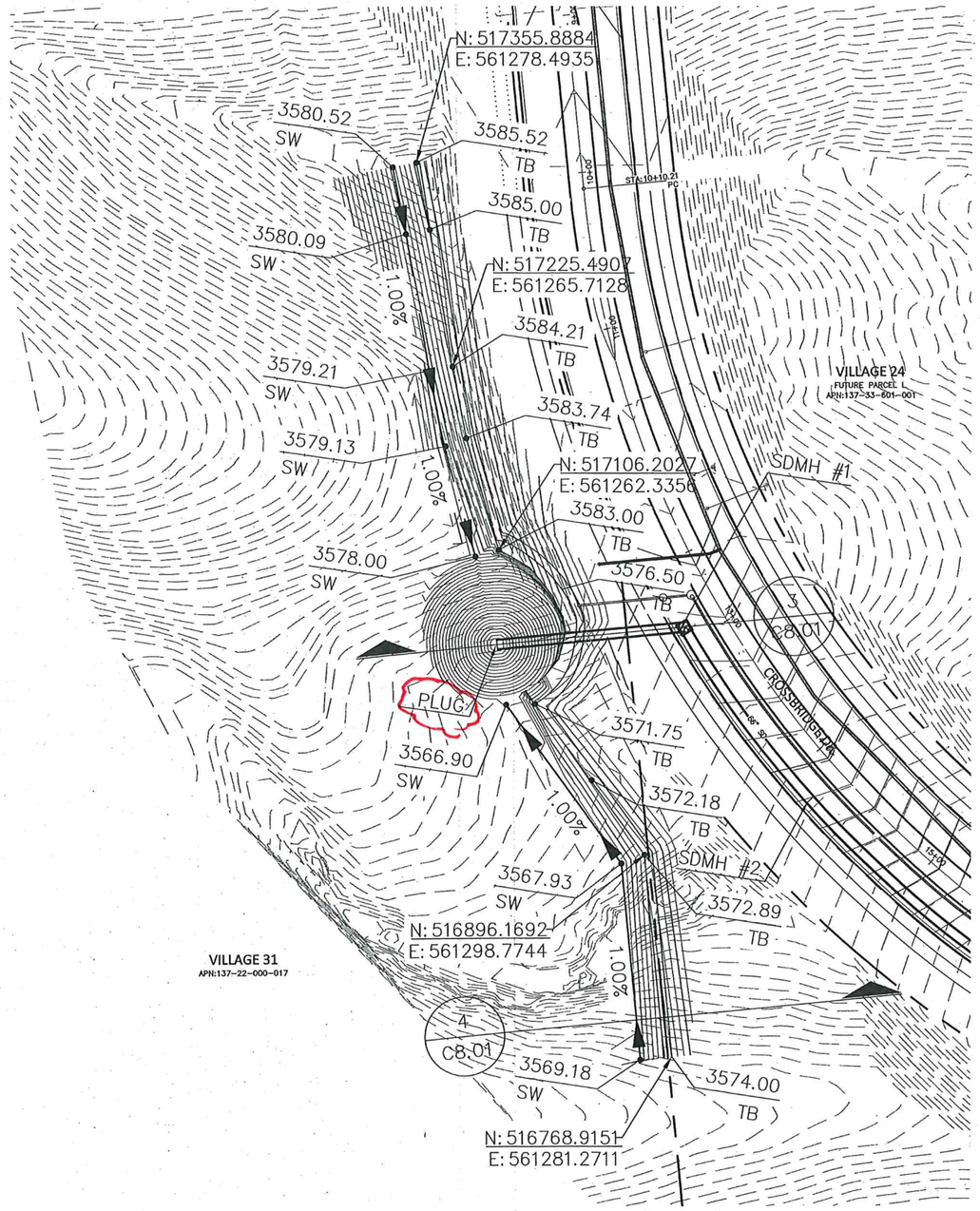
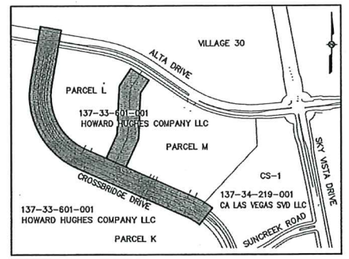




KEY MAP
NTS

GRAPHIC SCALE
40 0 20 40
SCALE: 1"=40'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #0368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811 or
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511
CLARK COUNTY TRAFFIC SYSTEMS
CALL 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED		EXISTING	PROPOSED	
(0.00%)	0.00%	SLOPE			AC PAVEMENT
(0.00) XX	0.00 XX	ELEVATION TAG			6" TYPE "A" CURB
		STORM MANHOLE			24" TYPE "L" CURB & GUTTER
		DROP INLET			30" ROLL CURB
--00--	--00--	CONTOUR			
		RETAINING WALL			
		SCREEN WALL			

	PL-RIGHT-OF-WAY
	PL-ADJACENT
	CENTERLINE
	EASEMENT LINE
	FLOW LINE
	SAWCUT LINE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

107V2D3

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
JAMES A. YANCEY
EXP. 06.30.18
CIVIL
NO. 016109
8/23/17

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
ROUGH GRADING PLAN 2
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=40
SHEET NUMBER C5.13
SHEET 18 OF 26

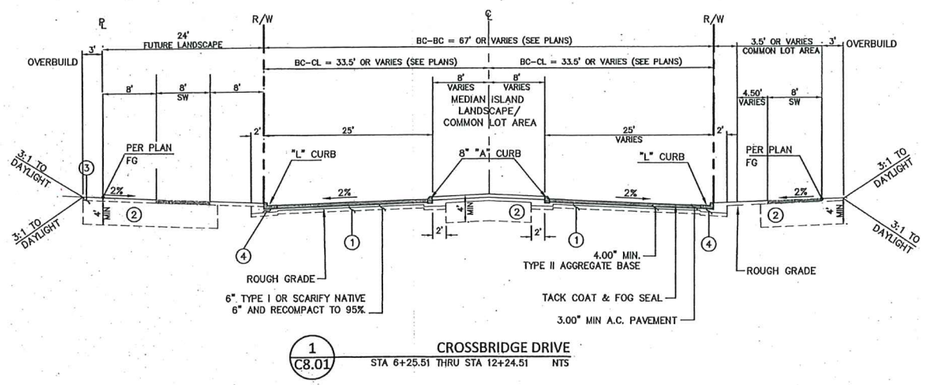
H to 524.6

PROJ#:124806 AGR:116009 QS:137-33-NE

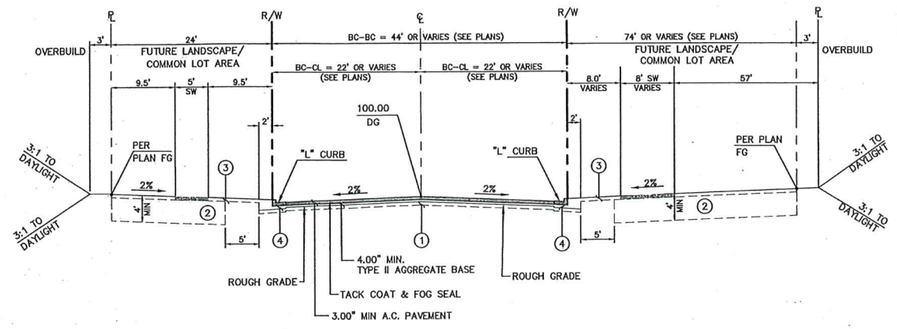
H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-C4.01-HGRD.DWG 08/09/2017 03:51:20 PM

NOTES:

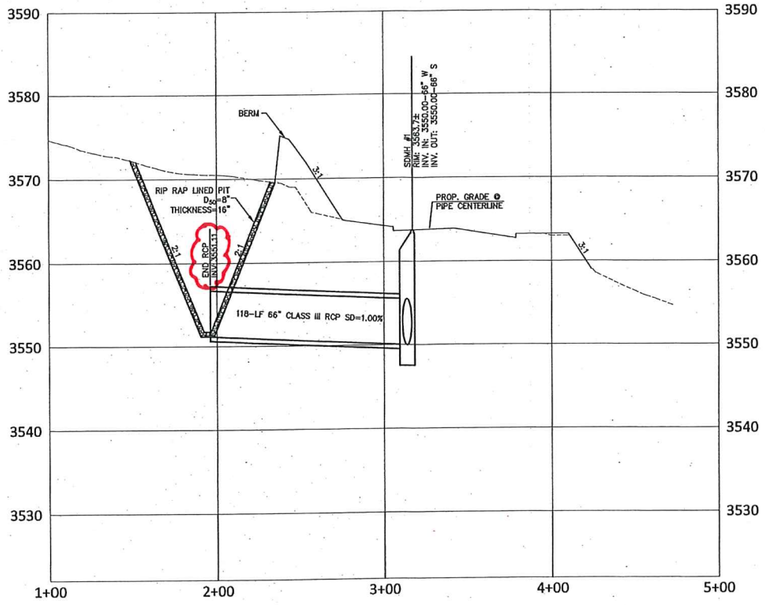
1. TYPE 1 OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%
2. LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% RIP ENTIRE AREA TO DEPTH INDICATED.
3. ROUGH GRADE (R.G.) TO BE 6" BELOW FINISHED GRADE (F.G.) FOR FUTURE LANDSCAPE PURPOSES.
4. 6" MIN TYPE II AGGREGATE BASE UNDER CURB AND GUTTER,TYPICAL



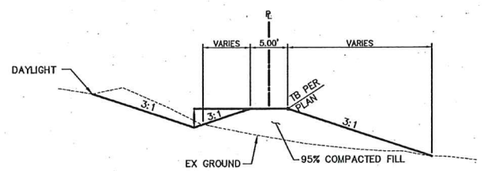
1 C8.01 CROSSBRIDGE DRIVE
STA 6+25.51 THRU STA 12+24.51 NTS



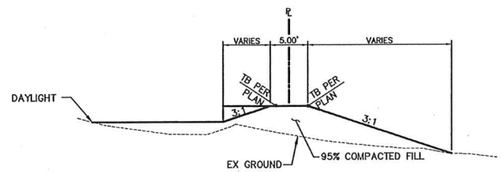
2 C8.01 CROSSBRIDGE DRIVE
STA 13+79.24 THRU STA 30+60.00 NTS



3 C8.01 66" STORM DRAIN LINE
@ STA: 13+01.69 H: 1"=20'
V: 1"=5'



4 C8.01 TEMPORARY DIVERSION BERM
NTS



5 C8.01 TEMPORARY DIVERSION BERM
NTS

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO: 124806 DATE: 8/31/17
107V7063

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES A. YANCEY
DR 16-5-18
CIVIL
NO. 016109

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

DETAILS SHEET 1

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C8.01
SHEET 23 OF 26

H:\5476

PROJ#:124806 AGR:116009 QS:137-33-NE

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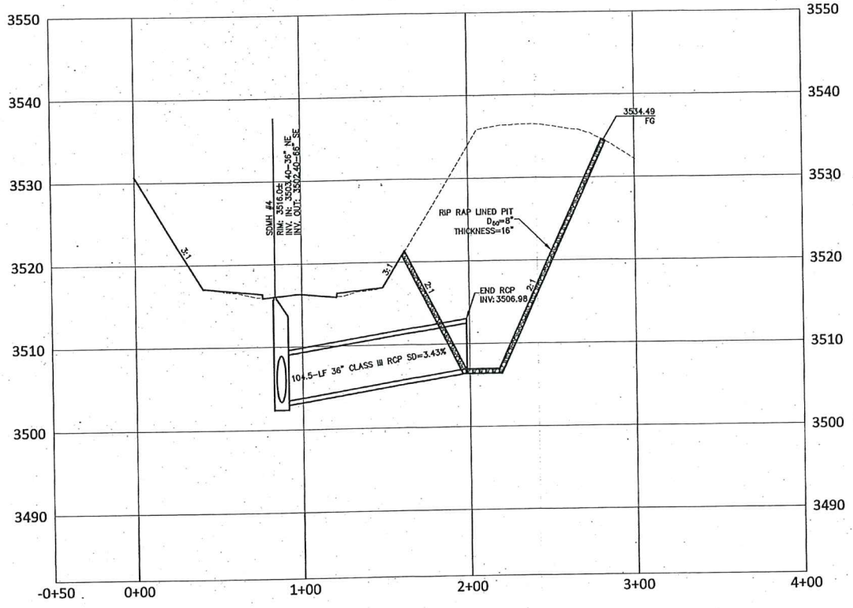
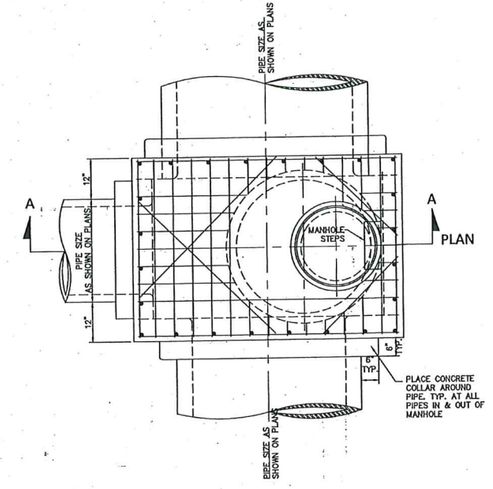
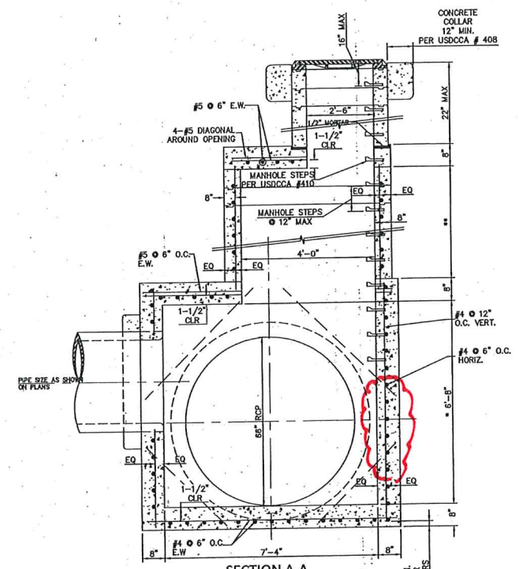


6 / C8.02 — **36" STORM DRAIN LINE**
STA: 20+67.73 — H: 1"=20' V: 1"=5'





SECTION A-A

SDMH	*	**
1	6'-8"	4'-0"
2	6'-8"	3'-0"
3	6'-8"	4'-0"
4	6'-8"	4'-0"
5	10'-0"	1'-0"
6	6'-8"	4'-0"
7	6'-8"	4'-0"
8	6'-8"	5'-0"

7 / C8.02 — **MANHOLE DETAIL**
NTS

107V7063

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LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER — STATE OF NEVADA — JAMES A. YANCEY — EXP. 06.30.18 — CIVIL — NO. 016109 — 4/28/17

IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

DETAILS SHEET 2
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C8.02
SHEET 24 OF 26

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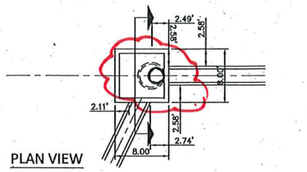
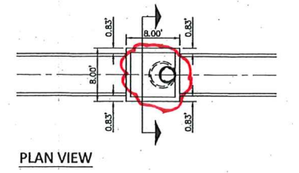


PLAN VIEW

PROFILE VIEW

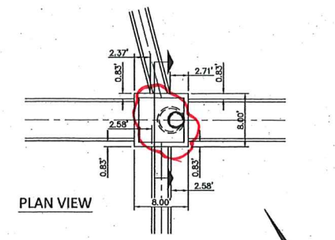
A C8.03 SDMH #1 NTS



PLAN VIEW

PROFILE VIEW

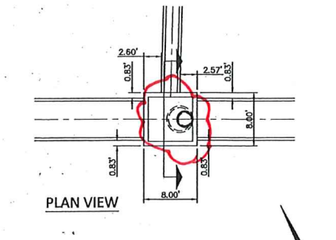
B C8.03 SDMH #2 NTS



PLAN VIEW

PROFILE VIEW

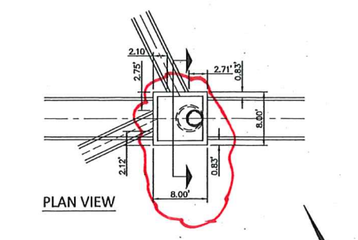
C C8.03 SDMH #3 NTS



PLAN VIEW

PROFILE VIEW

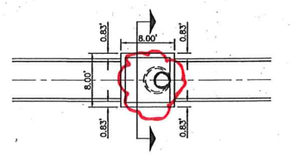
D C8.03 SDMH #4 NTS



PLAN VIEW

PROFILE VIEW

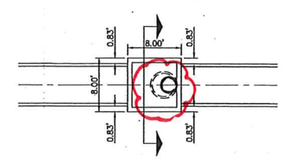
E C8.03 SDMH #5 NTS



PLAN VIEW

PROFILE VIEW

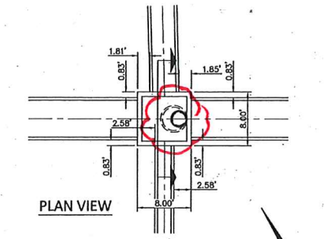
F C8.03 SDMH #6 NTS



PLAN VIEW

PROFILE VIEW

G C8.03 SDMH #7 NTS



PLAN VIEW

PROFILE VIEW

H C8.03 SDMH #8 NTS

107V7063

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PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-18
CIVIL
NO. 07 61 03

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

DETAILS SHEET 3

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C8.03
SHEET 25 OF 26

H-165076

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TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 24 CROSSBRIDGE DRIVE UNIT 3 STREET IMPROVEMENTS

62024-223

JANUARY 2018

GCW
ENGINEERS \ SURVEYORS

Prepared For:

Hughes Howard Company, LLC
10801 Charleston Blvd., 3Rd Floor
Las Vegas, Nevada 89146
Phone: (702) 791-4300

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin V. 24 Crossbridge Drive Unit 3 St. Improvements Date: January 2018

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

East/West: Alta Drive

b) Section: 33 Township: 20 S Range: 59 E

c) APN : 137-33-801--002

Name of Owner: Hughes Howard Company, LLC

Telephone No.: (702) 791 - 4300 Fax No.: N/A E-Mail Address: chris.anderson@howardhughes.com

Address: 10801 Charleston Blvd., 3Rd Floor, Las Vegas, Nevada 89146

Contact Person-Name: Steve Jones **Telephone No.:** (702) 804-2130

* **E-Mail Address:** sjones@gcwengineering.com **Fax No.:** (702) 804-2299

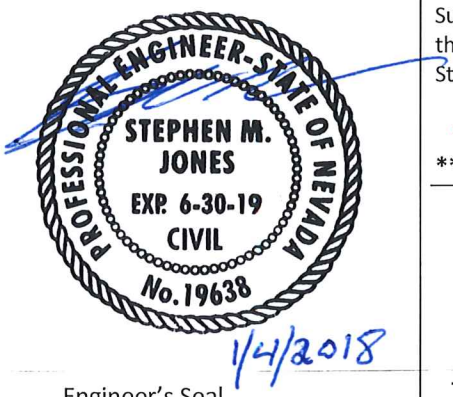
Firm: GCW, Inc.

Address: 1555 South Rainbow Blvd, Las Vegas, Nevada 89146

Type of Land Development/Land Disturbance Process:

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

1. Total Owned Land Area: At Site: 396.57 Ac Being Developed/Disturbed: 10 Ac
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☒ **Yes**** ☐ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ **Yes**** ☐ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Road Improvement
5. Approximate upstream land area which drains to the subject site: +/- 50 Ac
6. Has the site drainage been evaluated in the past? ☒ **YES** ☐ **NO** If yes, please identify documentation: Conceptual Drainage Study for Summerlin V. 24 (DS #3505), TDS for V. 24 Unit 2 Improvement (DS #4136), and Summerlin V. 24 Crossbridge Dr. Unit 3 St. Improvements (DS #4757B)
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site:
   The flow generated by the proposed Crossbridge Drive conveyed by the proposed 66-inch RCP SD
8. Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal

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

***New Required Field**

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

Revision	Date

Local Entity File No.

REFERENCE:

STANDARD FORM 1

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

DRAINAGE SUBMITTAL CHECKLIST

Project Name: Summerlin V. 24 Crossbridge Drive Unit 3 St. Improvements	Map ID:
Firm Name: GCW, Inc.	Engineer: Steve Jones
Address: 1555 S. Rainbow Blvd	
City: Las Vegas	State: Nevada Zip: 89146
Phone Number: (702) 804-2130	Fax Number: (702) 804-2299
Property Owner: Hughes Howard Company, LLC	
Address: 10801 Charleston Blvd., 3Rd Floor	
City: Las Vegas	State: Nevada Zip: 89146

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.
	N/A	Design Manual **Standard Form 4**.
	N/A	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	
	N/A	A copy of a current Flood Insurance Rate Map (FIRM) with the site delineated.
	N/A	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	
_____	N/A	Off-site drainage basin maps for existing, interim and future conditions showing the existing topography, basin boundaries, concentration points, and flows in cfs.
_____	N/A	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.
_____	N/A	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.
X	_____	Proposed future and existing spot grades for top of curbs and street crowns at lot lines, grade breaks, and along curb returns on both sides of the street.
X	_____	Existing contours encompassing the site and 100 feet beyond with spot elevations for important locations, where appropriate.
X	_____	Minimum finish floor elevations with top-of-curb elevations at upstream end of lot.
X	_____	Proposed typical street sections.

REFERENCE:	**STANDARD FORM 2**

DRAINAGE SUBMITTAL CHECKLIST

III. DRAINAGE PLAN (Continued)

Yes	No	
X		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.
	N/A	Delineation of proposed on-site drainage basins indicating area and 10-year and 100-year storm peak flows at basin concentration points.
	N/A	Concentration points and drainage flow direction with Q100 and V100 and D100 in streets.
	N/A	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.
	N/A	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.
	NA	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.
	N/A	Alignment of all existing, proposed, or future Regional Facilities adjacent to the site.
	NA	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	
_____	NA	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 Q100 flows.
_____	N/A	Street slopes for perimeter and interior streets. The minimum slope is 0.4 percent.
_____	NA	Location and detail of best management practice (BMP) for parking lots and low impact development (LID) (if required).

IV. HYDROLOGIC ANALYSIS

Yes	No	
_____	N/A	Appropriate soil information and Soils Map for existing and future conditions with subbasins and property delineated.
_____	N/A	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.
_____	N/A	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.
_____	N/A	Use of correct precipitation values in and around the McCarran Airport rainfall area.
_____	N/A	A discussion in the text of the hydrologic analysis justifying subbasin boundaries and cutoffs, supporting assumptions, and calculations.
_____	N/A	A summary table of stormwater flows showing basin area, Q10 and Q100 for both individual basins and combined basin flows, where applicable.
_____	N/A	Copies of supporting technical information referenced from a previously approved study and a statement accepting these results.
_____	N/A	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	
_____	NA	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 Q100 and Q10 flows representing the worst case for interior and all perimeter streets. Q100 d x v < 8. Q10 d x v < 6 and 12 foot dry lane for rights-of-way > 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, Q100 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 Q100 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.
_____	N/A	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

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.)
	N/A	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	
X		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.
X		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.
	N/A	Sites with a grade difference two feet above or below existing ground are required to have approval from City of Las Vegas Current Planning. Current Planning approval is required prior to final approval of the drainage study.
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.

TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 24 CROSSBRIDGE DRIVE UNIT 3 STREET IMPROVEMENTS

62024-223

JANUARY 2018

Prepared For:

Hughes Howard Company, LLC
10801 Charleston Blvd., 3Rd Floor
Las Vegas, Nevada 89146
Phone: (702) 791-4300

Prepared By:

GCW, Inc.
1555 S. Rainbow Blvd.
Las Vegas, NV 89146
(702) 804-2000

62024-223

January 8, 2018

Albert Y. Sung, PE
Flood Control Project Manager
City of Las Vegas - Land Development Services
Department of Public Works
333 N. Rancho Drive
Las Vegas, Nevada 89106

Re: Technical Drainage Study for Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements

Dear Mr. Sung:

The purpose of this letter is to serve as the update to the subject project and to accompany an improvement plan revision submittal being made concurrently with this update. The *Technical Drainage Study for Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements* (hereinafter referred to as the Unit 3 Study) prepared by Collins Engineers Inc. was approved by the City of Las Vegas Public Works Department on March 16, 2016 and by the Clark County Regional Flood Control District on April 26, 2016.

Since the approval of Unit 3 Study, field conditions during construction have resulted in drop inlets requiring re-location. According to the survey shots, Drop Inlets (DI) #5 and #6, and manhole (SDMH) #8 are needed to be moved 5 feet to the east due to a conflict with an existing Centurylink vault. In addition, DI #4 is required to move for a better connection into the 60-inch storm drain SDMH #5 instead of an un-constructible connection on the side of the manhole.

The hydraulic calculation report shows that the 100-year flow (Q100) at SDMH #8 is 200 cfs, however, the Q100 at DI #5 and #6 are 9.2 cfs and 6.1 cfs, respectively. Moreover, the Q100 at SDMH #5 is 189.8 cfs, while the Q100 at DI #4 is 5.8 cfs. Although the drop inlets are proposed to be shifted from the approved design, the revision of the storm drain has negligible effects on the hydraulic performance of the storm drain. Therefore, the proposed revision does not pose any negative impacts on downstream facilities or development and is in compliance with the *CCRFCD Hydrologic Criteria and Drainage Design Manual* (Manual).

The plan and profiles have been re-reviewed for completeness and accuracy. Flow rates and HGLs based on previous approved hydraulic models have been labeled and annotated on the plans. Applicable reference material are included in this submittal.

The original approved plans clouded where changes have been made are included in the appendix for reference to the changes. If you have any questions or require additional information, please contact me by medalat@gcwengineering.com.

Cordially,

GCW, INC.

Masih Edalat, PhD, EI
Flood Control Division

ME/me

c: Steve Jones, GCW
Vicki Marjerrison, GCW

1555 South Rainbow Boulevard
Las Vegas, Nevada 89146
O 702.804.2000
F 702.804.2299
info@gcwengineering.com
gcwengineering.com

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: March 16, 2016
TO: **Land Development Services** Department of Building & Safety				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for: **Summerlin Village 24 – Crossbridge Drive** **Unit 3 Street Improvements (Suncreek to Alta)**			**COPIES TO:** Collin Engineers, Inc.
Cross Streets:	Crossbridge Drive from Suncreek to Alta			Howard Hughes Company
File Number:	F:\Depot\DSMemos\DS4757B.ZNA.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-33-801-002			CCRFCD
Zoning Action:	N/A			
FEMA Flood Zone	YES	**X**	NO	
Proposed Storm Drain	YES	**X**	NO	

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Payment Trn #
1st Submittal	10/1/2015	11/4/2015	Not Approved	$400.00	417114: $400
2nd Submittal	2/23/2016 & 3/15/2016	3/16/2016	See Comments Below	$400.00	434039: $400
			TOTAL FEES (LDDRS):	**$800.00**	----

REMARKS:

A portion of this site is located in a FEMA Special Flood Hazard Area, Zone A. This project is for roadway infrastructure only. Mapping changes to the Flood Zone are required to be submitted to FEMA with this development.

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. The drainage study shows that a portion of the subject site (intersection of *Alta Drive* and *Crossbridge Drive*) is located in a FEMA designated Special Flood Hazard Area, Zone A. The study shall address the Flood Zone impacts and recommended solution to properly remove the area out of the flood zone through a *Letter of Map Revision* (LOMR) application to FEMA. **Verification of the LOMR submittal to FEMA is required prior to issuance of any permits.**

2. A portion of the FEMA Special Flood Hazard Area, Zone A, is shown within a future development parcel. **No permits of any kind within the development parcel will be issued until the Letter of Map Revision (LOMR) is received from FEMA.**

3. Since the project is within a FEMA Special Flood Hazard Area, Zone A, *Clark County Regional Flood Control District* (CCRFCD) review and approval is required prior to the final approval of the drainage study by the City of Las Vegas.

4. The developer/engineer must also obtain a *Letter of Map Revision* (LOMR) using the approved drainage study as technical support to inform FEMA of the modifications within the flood zone. The bonded improvements shall include a line item of **$50,000.00** for the LOMR. The bonded improvements will not be released until the LOMR is obtained from FEMA and filed with the City of Las Vegas.

5. The subject *Unit 3 Street Improvements of Crossbridge Drive* is a portion of the integral *Crossbridge Drive* (Unit 1 to Unit 3) which base on the flood protection of an interim channel along the west boundary of **Village 24**. Prior to final plan approval the developer must complete a maintenance and liability agreement for the interim drainage improvements and post a minimum maintenance bond of $25,000 or 25-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 *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.

6. All drainage facilities and the roadway improvements are considered interim facilities and must be maintained by the Master Developer until the facilities are dedicated to and formally accepted by the *City of Las Vegas City Council.*

7. Please obtain necessary 404 permits from Army Corps of Engineers and provide a copy of the permit to Flood Control prior to issuance of the grading permit. The contact information for Army Corps of Engineers is listed below:

   Steven W. Roberts
   Chief, Regulatory Field Office
   US Army Corps of Engineers
   321 North Mall Drive
   Suite L-101
   St. George, UT 84790
   (435) 986-3979 (Office)
   (435) 986-3981 (FAX)
   steven.w.roberts@usace.army.mil

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

END OF REMARKS
ays

T/R/S: T20S/R59E/33
AREA K-33

REGIONAL FLOOD CONTROL DISTRICT

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

BOARD OF DIRECTORS

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April 26, 2016

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

DISTRICT CONCURRENCE: SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3 STREET IMPROVEMENTS (SUNCREEK TO ALTA) (DS #4757B) (RFCD No. 16-9668)

Dear Mr. Kwon:

Clark County Regional Flood Control District (District) reviewed Technical Drainage Study dated September 30, 2015, and Addendum No. 1 dated February 22, 2016 for above-mentioned project as submitted by COLLINS ENGINEERS, INC. In addition, District is in receipt of the Conditional Letter of Acceptance from City of Las Vegas Department of Public Works dated March 16, 2016.

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*. As noted in study, site resides in a Special Flood Hazard Area (SFHA) designated as "Zone A" per the effective Flood Insurance Rate Map (FIRM). Therefore, consultant should be advised that this acceptance does not serve to amend the FIRM or remove the SFHA.

Please be aware that as additional information becomes available and/or restudies of Flood Insurance Studies are performed, information submitted by COLLINS ENGINEERS, INC. 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

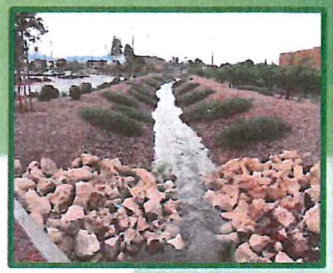
BY: _____
Abigail Mayrena, P.E., CFM
Principal Civil Engineer

AM:sa

c: Kenneth T. Yamada, P.E., Collins Engineers, Inc.

P:\Letters and Memos\Local Drainage\Land Development & Drainage\2016\L-16-9668.doc

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



Addendum 1 to the Drainage Study for Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements

APN 137-33-801-002

February 2016

Prepared for:

The Howard Hughes Company, LLC
10801 W Charleston Blvd, Suite 300,
Las Vegas, NV 89146
Contact: 702-791-4600

Prepared by:

COLLINS ENGINEERS INC.

3130 S. Durango Drive, Suite 404
Las Vegas, Nevada 89117
702.248.8000 • www.collinsengr.com

```
[TITLE]
 Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements
 66-Inch Storm Drain Capacity Analysis
 Collins Engineers Job No. 9106

[REPORT]
COMPOSITE_ONLY

[NETWORK]
**TYPE            NAME
**-----           -------
Outlet            "EX MH#33"
Reach             "Link10"
Reach             "Link9"
Join              "SDMH8"
Reach             "Link8"
Reach             "Link7"
Reach             "Link6"
Join              "SDMH5"
Reach             "Link5"
Join              "SDMH 4"
Reach             "Link12"
Reach             "Link11"
Join              "SDMH3"
Reach             "Link3"
Reach             "Link2"
Reach             "Link1"
Headwork          "CB"

**BRANCH DEFINITIONS


"SDMH3_Branch1"
Join              "SDMH3"
Reach             "Link16"
Headwork          "DI #1"


"SDMH3_Branch2"
Join              "SDMH3"
Reach             "Link17"
Headwork          "DI #2"


"SDMH 4_Branch1"
Join              "SDMH 4"
Reach             "Link13"
Headwork          "CB L"


"SDMH5_Branch1"
Join              "SDMH5"
Reach             "Link14"
Headwork          "DI #3"


"SDMH5_Branch2"
Join              "SDMH5"
Reach             "Link15"
Headwork          "DI #4"
```

"SDMH8_Branch1"
Join "SDMH8"
Reach "Link18"
Headwork "CB M"

"SDMH8_Branch2"
Join "SDMH8"
Reach "Link19"
Headwork "DI #5"

"SDMH8_Branch3"
Join "SDMH8"
Reach "Link20"
Headwork "DI #6"

[OUTLET]

**NAME	STATION	INVERT ELEV	GROUND ELEV	CHANNEL ID	WATER SURFACE ELEV (opt.)
"EX MH#33"	1000	435.34	448.3	"66-inch"	44.32

[HEADWORK]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	FLOW	WATER SURFACE ELEV (opt.)
"CB"	551.18	570	"66-inch"	143	100
"CB L"	506.99	530	"36-inch"	38	0
"DI #3"	486.99	498.1	"24-inch"	4.4	0
"DI #4"	486.58	498.1	"24-inch"	5.8	0
"DI #1"	524.71	535	"24-inch"	3	0
"DI #2"	523.65	533.8	"24-inch"	5.8	0
"CB M"	440.7	460	"42-INCH"	53	0
"DI #5"	441.87	453.8	"24-inch"	9.2	0
"DI #6"	442.05	453	"24-inch"	6.1	0

[WALLENTRANCE]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT(opt.)

[WALLEXIT]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT(opt.)

[BRIDGEENTRANCE]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	REDUCTION FACTOR(opt.)

[BRIDGEEXIT]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	REDUCTION FACTOR(opt.)

[JOIN]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	NUMBER OF BRANCHES	CONFLUENCE ANGLE

				Crossbridge			
"SDMH3"	520	533.5	"66-inch"	6	0.013	2	
"SDMH3_Branch1"	523.5		"24-inch"				75
"SDMH3_Branch2"	523.5		"24-inch"				-90
"SDMH 4"	502.4	516	"66-inch"	6	0.013	1	
"SDMH 4_Branch1"	504.9		"36-inch"				90
"SDMH5"	482.7	496.6	"66-inch"	6	0.013	2	
"SDMH5_Branch1"	486.2		"24-inch"				60
"SDMH5_Branch2"	486.2		"24-inch"				-30
"SDMH8"	438.4	452.6	"66-inch"	6	0.013	3	
"SDMH8_Branch1"	439.4		"42-INCH"				90
"SDMH8_Branch2"	440.9		"24-inch"				64
"SDMH8_Branch3"	441.9		"24-inch"				-90

[JUNCTION]

**Name	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	NUMBER OF LATERALS	CONFLUENCE ANGLE	FLOW

[TRANSITION]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n

[REACH]

**NAME	INVERT ELEV	GROUND ELEV	CHANNEL ID	LENGTH	MANNINGS n	CURVE (opt)	ANGLE POINT(opt)	NUMBER MANHOLES(opt)
"Link1"	551.18	570	"66-inch"	118	0.013	0	15	1
"Link2"	550	563.7	"66-inch"	135.1	0.013	0	0	1
"Link3"	546.3	558.9	"66-inch"	407.7	0.013	0	0	0
"Link5"	502.4	516	"66-inch"	272.5	0.013	0	0	0
"Link6"	482.7	496.6	"66-inch"	395.6	0.013	0	0	0
"Link7"	455	468.7	"66-inch"	153.35	0.013	0	0	1
"Link8"	444.8	458.2	"66-inch"	108.02	0.013	0	0	0
"Link9"	438.4	452.6	"66-inch"	38.6	0.013	0	0	0
"Link10"	438.1	450	"66-inch"	184.54	0.013	0	0	0
"Link11"	520	533.5	"66-inch"	116.98	0.013	0	0	0
"Link12"	511.72	525.4	"66-inch"	132.07	0.013	0	0	0
"Link13"	506.99	530	"36-inch"	101.5	0.013	0	0	0
"Link14"	486.99	498.1	"24-inch"	36.5	0.013	0	0	0
"Link15"	486.58	498.1	"24-inch"	15.8	0.013	0	0	0
"Link16"	524.71	535	"24-inch"	57.6	0.013	0	0	0
"Link17"	523.65	533.8	"24-inch"	4.5	0.013	0	0	0
"Link18"	440.7	460	"42-INCH"	127	0.013	0	0	0
"Link19"	441.87	453.8	"24-inch"	45.8	0.013	0	0	0
"Link20"	442.05	453	"24-inch"	4.5	0.013	0	0	0

[DROP]

**Name	INVERT ELEV	GROUND ELEV	CHANNEL ID	LOSS COEFFICIENT

[CHANNEL]

**REGULAR TYPES 1-4 7-8

**ID	TYPE	HEIGHT	WIDTH	LEFT SLOPE	RIGHT SLOPE	NUMBER PIERS	AVG PIER WIDTH	INVERT CROSS FALL	NUM OF BARRELS

Crossbridge

"66-inch"	4	5.5										
"36-inch"	4	3							1			
"24-inch"	4	2							1			
"42-INCH"	4	3.5							1			
									1			

**IRREGULAR TYPES 5-6

**ID	TYPE	NUMBER	AVG PIER	PIER1	PIER2	PIER3	PIER4	PIER5	PIER6	PIER7	PIER8	PIER9	PIER10
**		PIERS	WIDTH	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV	ELEV

[POINT]

**ID	XCOORD	YCOORD

****
Water Surface Profile Gradient (WSPG)
XP WSPG
Engine Version 3.0 30/09/2011
XP Solutions www.xpsolutions.com
****

INPUT FILE
****
H:\Cad\Land\9106\ADMIN\Drainage\CROSSBRIDGE\TDS\ADD1\Hydraulic\wspg\Crossbridge.wsx
Computed 02/09/16 09:22:28

TITLE INFORMATION
****
Summerlin Village 24 Crossbridge Drive Unit 3 Street Improvements
66-Inch Storm Drain Capacity Analysis
Collins Engineers Job No. 9106

WARNING SUMMARY
****

RESULTS
****

==========
Main Line
==========

Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"EX MH#33"	Outlet	1000.00	435.34	448.30	438.544	3.204	268.30	1	18.68	5.42	443.96	0.000	4.552	0.000	0.00000	0.000	Circular Pipe
"Link10"	Reach	1184.54	438.10	450.00	441.248	3.148	268.30	1	19.08	5.65	446.90	0.000	4.552	2.092	0.01496	3.241	Circular Pipe
"Link9"	Reach	1223.14	438.40	452.60	441.448	3.048	268.30	1	19.85	6.12	447.57	0.000	4.552	2.225	0.00777	4.103	Circular Pipe
"SDMH8"	Join	1229.14	438.40	452.60	440.225	1.825	200.00	1	29.04	13.09	453.32	0.000	3.959	0.000	0.00000	0.000	Circular Pipe
"Link8"	Reach	1337.16	444.80	458.20	446.592	1.792	200.00	1	29.76	13.75	460.35	0.000	3.959	4.594	0.05925	1.853	Circular Pipe
"Link7"	Reach	1490.51	455.00	468.70	456.779	1.779	200.00	1	30.06	14.03	470.81	0.000	3.959	4.659	0.06651	1.798	Circular Pipe
	"i.p."	1654.77	466.50	480.28	468.297	1.796	200.00	1	29.69	13.68	481.98	0.000	3.959	4.578	0.07002	1.774	Circular Pipe
	"i.p."	1815.58	477.76	491.63	479.621	1.859	200.00	1	28.30	12.44	492.06	0.000	3.959	4.280	0.07002	1.774	Circular Pipe
"Link6"	Reach	1886.11	482.70	496.60	484.625	1.925	200.00	1	26.99	11.31	495.93	0.000	3.959	4.002	0.07002	1.774	Circular Pipe
"SDMH5"	Join	1892.11	482.70	496.60	484.456	1.756	189.80	1	29.05	13.10	497.56	0.000	3.856	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1989.81	489.76	503.56	491.575	1.812	189.80	1	27.83	12.02	503.60	0.000	3.856	4.270	0.07229	1.712	Circular Pipe
	"i.p."	2047.83	493.96	507.69	495.833	1.876	189.80	1	26.53	10.93	506.76	0.000	3.856	3.992	0.07229	1.712	Circular Pipe
	"i.p."	2085.69	496.69	510.38	498.637	1.942	189.80	1	25.30	9.94	508.58	0.000	3.856	3.732	0.07229	1.712	Circular Pipe
	"i.p."	2113.14	498.68	512.34	500.691	2.012	189.80	1	24.12	9.03	509.73	0.000	3.856	3.488	0.07229	1.712	Circular Pipe
	"i.p."	2134.21	500.20	513.84	502.286	2.084	189.80	1	23.00	8.21	510.50	0.000	3.856	3.259	0.07229	1.712	Circular Pipe
	"i.p."	2150.97	501.41	515.03	503.573	2.159	189.80	1	21.93	7.47	511.04	0.000	3.856	3.044	0.07229	1.712	Circular Pipe
"Link5"	Reach	2164.61	502.40	516.00	504.638	2.238	189.80	1	20.91	6.79	511.43	0.000	3.856	2.843	0.07229	1.712	Circular Pipe

"SDMH 4"	Join	2170.61	502.40	516.00	503.949	1.549	151.80	1	27.64	11.86	515.81	0.000	3.437	0.000	0.00000	0.000	Circular Pipe
"Link12"	Reach	2302.68	511.72	525.40	513.307	1.587	151.80	1	26.73	11.10	524.40	0.000	3.437	4.413	0.07057	1.535	Circular Pipe
	"i.p."	2375.52	516.88	530.44	518.515	1.640	151.80	1	25.55	10.13	528.65	0.000	3.437	4.143	0.07078	1.534	Circular Pipe
"Link11"	Reach	2419.66	520.00	533.50	521.697	1.697	151.80	1	24.36	9.21	530.91	0.000	3.437	3.876	0.07078	1.534	Circular Pipe
"SDMH3"	Join	2425.66	520.00	533.50	521.530	1.530	143.00	1	26.51	10.91	532.44	0.000	3.332	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2605.85	531.62	544.73	533.195	1.571	143.00	1	25.54	10.13	543.32	0.000	3.332	4.239	0.06451	1.523	Circular Pipe
	"i.p."	2685.51	536.76	549.69	538.388	1.626	143.00	1	24.35	9.21	547.59	0.000	3.332	3.967	0.06451	1.523	Circular Pipe
	"i.p."	2729.95	539.63	552.46	541.312	1.683	143.00	1	23.22	8.37	549.68	0.000	3.332	3.711	0.06451	1.523	Circular Pipe
	"i.p."	2759.95	541.56	554.33	543.306	1.742	143.00	1	22.14	7.61	550.91	0.000	3.332	3.472	0.06451	1.523	Circular Pipe
	"i.p."	2782.07	542.99	555.70	544.794	1.803	143.00	1	21.11	6.92	551.71	0.000	3.332	3.247	0.06451	1.523	Circular Pipe
	"i.p."	2799.21	544.10	556.77	545.964	1.867	143.00	1	20.12	6.29	552.25	0.000	3.332	3.036	0.06451	1.523	Circular Pipe
	"i.p."	2812.91	544.98	557.63	546.914	1.933	143.00	1	19.19	5.72	552.63	0.000	3.332	2.838	0.06451	1.523	Circular Pipe
	"i.p."	2824.10	545.70	558.32	547.705	2.002	143.00	1	18.29	5.20	552.90	0.000	3.332	2.653	0.06451	1.523	Circular Pipe
"Link3"	Reach	2833.36	546.30	558.90	548.374	2.074	143.00	1	17.44	4.72	553.10	0.000	3.332	2.479	0.06451	1.523	Circular Pipe
	"i.p."	2869.29	547.28	560.18	549.422	2.138	143.00	1	16.74	4.35	553.77	0.000	3.332	2.337	0.02739	1.903	Circular Pipe
	"i.p."	2898.87	548.09	561.23	550.310	2.216	143.00	1	15.96	3.95	554.26	0.000	3.332	2.182	0.02739	1.903	Circular Pipe
	"i.p."	2920.67	548.69	562.00	550.988	2.297	143.00	1	15.22	3.60	554.58	0.000	3.332	2.037	0.02739	1.903	Circular Pipe
	"i.p."	2937.32	549.15	562.59	551.528	2.381	143.00	1	14.51	3.27	554.80	0.000	3.332	1.901	0.02739	1.903	Circular Pipe
	"i.p."	2950.29	549.50	563.05	551.972	2.469	143.00	1	13.83	2.97	554.94	0.000	3.332	1.773	0.02739	1.903	Circular Pipe
	"i.p."	2960.47	549.78	563.42	552.342	2.561	143.00	1	13.19	2.70	555.04	0.000	3.332	1.654	0.02739	1.903	Circular Pipe
"Link2"	Reach	2968.46	550.00	563.70	552.658	2.658	143.00	1	12.58	2.46	555.11	0.000	3.332	1.541	0.02739	1.903	Circular Pipe
	"i.p."	3016.50	550.48	566.26	553.227	2.747	143.00	1	12.06	2.26	555.48	0.000	3.332	1.447	0.01000	2.506	Circular Pipe
	"i.p."	3048.20	550.80	567.96	553.649	2.852	143.00	1	11.49	2.05	555.70	0.000	3.332	1.346	0.01000	2.506	Circular Pipe
	"i.p."	3067.36	550.99	568.98	553.952	2.963	143.00	1	10.96	1.87	555.82	0.000	3.332	1.252	0.01000	2.506	Circular Pipe
	"i.p."	3078.74	551.10	569.59	554.182	3.079	143.00	1	10.45	1.70	555.88	0.000	3.332	1.163	0.01000	2.506	Circular Pipe
	"i.p."	3084.67	551.16	569.90	554.364	3.202	143.00	1	9.96	1.54	555.91	0.000	3.332	1.080	0.01000	2.506	Circular Pipe
"Link1"	Reach	3086.46	551.18	570.00	554.511	3.331	143.00	1	9.50	1.40	555.91	0.000	3.332	1.000	0.01000	2.506	Circular Pipe
"CB"	Headwrk	3086.46	551.18	570.00	554.512	3.332	143.00	1	9.50	1.40	555.91	0.000	3.332	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH3_Branch1

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	2425.66	523.50	533.50	523.911	0.411	3.00	1	6.46	0.65	524.56	0.000	0.604	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2445.58	523.92	534.02	524.334	0.416	3.00	1	6.34	0.62	524.96	0.000	0.604	2.071	0.02101	0.409	Circular Pipe
	"i.p."	2461.61	524.26	534.44	524.685	0.430	3.00	1	6.05	0.57	525.25	0.000	0.604	1.940	0.02101	0.409	Circular Pipe
	"i.p."	2469.05	524.41	534.63	524.856	0.445	3.00	1	5.77	0.52	525.37	0.000	0.604	1.817	0.02101	0.409	Circular Pipe
	"i.p."	2473.60	524.51	534.75	524.967	0.460	3.00	1	5.50	0.47	525.44	0.000	0.604	1.702	0.02101	0.409	Circular Pipe
	"i.p."	2476.67	524.57	534.83	525.047	0.476	3.00	1	5.24	0.43	525.47	0.000	0.604	1.594	0.02101	0.409	Circular Pipe
	"i.p."	2478.85	524.62	534.89	525.109	0.492	3.00	1	5.00	0.39	525.50	0.000	0.604	1.492	0.02101	0.409	Circular Pipe
	"i.p."	2480.44	524.65	534.93	525.159	0.509	3.00	1	4.77	0.35	525.51	0.000	0.604	1.397	0.02101	0.409	Circular Pipe
	"i.p."	2481.57	524.67	534.96	525.201	0.526	3.00	1	4.54	0.32	525.52	0.000	0.604	1.308	0.02101	0.409	Circular Pipe

	"i.p."	2482.36	524.69	534.98	525.236	0.545	3.00	1	4.33	0.29	525.53	0.000	0.604	1.224	0.02101	0.409	Circular Pipe
	"i.p."	2482.87	524.70	534.99	525.265	0.563	3.00	1	4.13	0.26	525.53	0.000	0.604	1.146	0.02101	0.409	Circular Pipe
	"i.p."	2483.17	524.71	535.00	525.291	0.583	3.00	1	3.94	0.24	525.53	0.000	0.604	1.072	0.02101	0.409	Circular Pipe
"Link16"	Reach	2483.26	524.71	535.00	525.313	0.603	3.00	1	3.76	0.22	525.53	0.000	0.604	1.003	0.02101	0.409	Circular Pipe
"DI #1"	Headwrk	2483.26	524.71	535.00	525.314	0.604	3.00	1	3.75	0.22	525.53	0.000	0.604	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH3_Branch2

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	2425.66	523.50	533.50	524.170	0.670	5.80	1	6.29	0.61	524.78	0.000	0.851	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2426.73	523.54	533.57	524.223	0.687	5.80	1	6.07	0.57	524.80	0.000	0.851	1.509	0.03333	0.506	Circular Pipe
	"i.p."	2427.89	523.57	533.65	524.286	0.711	5.80	1	5.79	0.52	524.81	0.000	0.851	1.410	0.03333	0.506	Circular Pipe
	"i.p."	2428.77	523.60	533.71	524.341	0.737	5.80	1	5.52	0.47	524.81	0.000	0.851	1.318	0.03333	0.506	Circular Pipe
	"i.p."	2429.40	523.62	533.75	524.388	0.763	5.80	1	5.26	0.43	524.82	0.000	0.851	1.232	0.03333	0.506	Circular Pipe
	"i.p."	2429.83	523.64	533.78	524.430	0.791	5.80	1	5.02	0.39	524.82	0.000	0.851	1.150	0.03333	0.506	Circular Pipe
	"i.p."	2430.08	523.65	533.79	524.467	0.820	5.80	1	4.78	0.36	524.82	0.000	0.851	1.074	0.03333	0.506	Circular Pipe
"Link17"	Reach	2430.16	523.65	533.80	524.500	0.850	5.80	1	4.56	0.32	524.82	0.000	0.851	1.003	0.03333	0.506	Circular Pipe
"DI #2"	Headwrk	2430.16	523.65	533.80	524.501	0.851	5.80	1	4.55	0.32	524.82	0.000	0.851	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH 4_Branch1

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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	2170.61	504.90	516.00	506.277	1.377	38.00	1	12.01	2.24	508.52	0.000	2.006	0.000	0.00000	0.000	Circular Pipe
	"i.p."	2198.08	505.47	519.79	506.877	1.412	38.00	1	11.62	2.10	508.98	0.000	2.006	1.961	0.02059	1.314	Circular Pipe
	"i.p."	2222.86	505.98	523.21	507.441	1.465	38.00	1	11.08	1.91	509.35	0.000	2.006	1.827	0.02059	1.314	Circular Pipe
	"i.p."	2238.86	506.31	525.41	507.826	1.521	38.00	1	10.57	1.73	509.56	0.000	2.006	1.701	0.02059	1.314	Circular Pipe
	"i.p."	2249.95	506.53	526.94	508.113	1.579	38.00	1	10.08	1.58	509.69	0.000	2.006	1.582	0.02059	1.314	Circular Pipe
	"i.p."	2257.89	506.70	528.04	508.338	1.641	38.00	1	9.61	1.43	509.77	0.000	2.006	1.471	0.02059	1.314	Circular Pipe
	"i.p."	2263.57	506.81	528.82	508.520	1.705	38.00	1	9.16	1.30	509.82	0.000	2.006	1.366	0.02059	1.314	Circular Pipe
	"i.p."	2267.55	506.90	529.37	508.670	1.774	38.00	1	8.73	1.18	509.85	0.000	2.006	1.267	0.02059	1.314	Circular Pipe

	"i.p."	2270.17	506.95	529.73	508.796	1.846	38.00	1	8.33	1.08	509.87	0.000	2.006	1.174	0.02059	1.314	Circular Pipe
	"i.p."	2271.64	506.98	529.94	508.903	1.923	38.00	1	7.94	0.98	509.88	0.000	2.006	1.085	0.02059	1.314	Circular Pipe
"Link13"	Reach	2272.11	506.99	530.00	508.995	2.005	38.00	1	7.57	0.89	509.88	0.000	2.006	1.001	0.02059	1.314	Circular Pipe
"CB L"	Headwrk	2272.11	506.99	530.00	508.996	2.006	38.00	1	7.57	0.89	509.88	0.000	2.006	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH5_Branch1
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1892.11	486.20	496.60	486.708	0.508	4.40	1	7.01	0.76	487.47	0.000	0.737	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1903.56	486.45	497.07	486.969	0.521	4.40	1	6.76	0.71	487.68	0.000	0.737	1.955	0.02164	0.491	Circular Pipe
	"i.p."	1911.85	486.63	497.41	487.167	0.539	4.40	1	6.44	0.64	487.81	0.000	0.737	1.830	0.02164	0.491	Circular Pipe
	"i.p."	1917.10	486.74	497.63	487.299	0.558	4.40	1	6.14	0.59	487.88	0.000	0.737	1.713	0.02164	0.491	Circular Pipe
	"i.p."	1920.71	486.82	497.78	487.396	0.577	4.40	1	5.86	0.53	487.93	0.000	0.737	1.603	0.02164	0.491	Circular Pipe
	"i.p."	1923.30	486.88	497.88	487.473	0.597	4.40	1	5.58	0.48	487.96	0.000	0.737	1.500	0.02164	0.491	Circular Pipe
	"i.p."	1925.20	486.92	497.96	487.534	0.618	4.40	1	5.32	0.44	487.97	0.000	0.737	1.403	0.02164	0.491	Circular Pipe
	"i.p."	1926.56	486.95	498.02	487.586	0.640	4.40	1	5.08	0.40	487.99	0.000	0.737	1.313	0.02164	0.491	Circular Pipe
	"i.p."	1927.52	486.97	498.06	487.629	0.663	4.40	1	4.84	0.36	487.99	0.000	0.737	1.228	0.02164	0.491	Circular Pipe
	"i.p."	1928.14	486.98	498.08	487.666	0.686	4.40	1	4.62	0.33	488.00	0.000	0.737	1.148	0.02164	0.491	Circular Pipe
	"i.p."	1928.50	486.99	498.10	487.698	0.710	4.40	1	4.40	0.30	488.00	0.000	0.737	1.073	0.02164	0.491	Circular Pipe
"Link14"	Reach	1928.61	486.99	498.10	487.726	0.736	4.40	1	4.20	0.27	488.00	0.000	0.737	1.003	0.02164	0.491	Circular Pipe
"DI #3"	Headwrk	1928.61	486.99	498.10	487.727	0.737	4.40	1	4.19	0.27	488.00	0.000	0.737	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH5_Branch2
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1892.11	486.20	496.60	486.821	0.621	5.80	1	6.97	0.76	487.58	0.000	0.851	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1896.42	486.30	497.01	486.945	0.641	5.80	1	6.68	0.69	487.64	0.000	0.851	1.726	0.02405	0.550	Circular Pipe
	"i.p."	1899.90	486.39	497.34	487.051	0.664	5.80	1	6.37	0.63	487.68	0.000	0.851	1.614	0.02405	0.550	Circular Pipe
	"i.p."	1902.47	486.45	497.58	487.136	0.687	5.80	1	6.07	0.57	487.71	0.000	0.851	1.509	0.02405	0.550	Circular Pipe
	"i.p."	1904.38	486.50	497.76	487.207	0.711	5.80	1	5.79	0.52	487.73	0.000	0.851	1.410	0.02405	0.550	Circular Pipe

	"i.p."	1905.77	486.53	497.90	487.266	0.737	5.80	1	5.52	0.47	487.74	0.000	0.851	1.318	0.02405	0.550	Circular Pipe
	"i.p."	1906.76	486.55	497.99	487.316	0.763	5.80	1	5.26	0.43	487.75	0.000	0.851	1.232	0.02405	0.550	Circular Pipe
	"i.p."	1907.42	486.57	498.05	487.359	0.791	5.80	1	5.02	0.39	487.75	0.000	0.851	1.150	0.02405	0.550	Circular Pipe
	"i.p."	1907.79	486.58	498.09	487.397	0.820	5.80	1	4.78	0.36	487.75	0.000	0.851	1.074	0.02405	0.550	Circular Pipe
"Link15"	Reach	1907.91	486.58	498.10	487.430	0.850	5.80	1	4.56	0.32	487.75	0.000	0.851	1.003	0.02405	0.550	Circular Pipe
"DI #4"	Headwrk	1907.91	486.58	498.10	487.431	0.851	5.80	1	4.55	0.32	487.75	0.000	0.851	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH8_Branch1
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1229.14	439.40	452.60	441.228	1.828	53.00	1	10.43	1.69	442.92	0.000	2.277	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1279.35	439.91	455.53	441.781	1.867	53.00	1	10.15	1.60	443.38	0.000	2.277	1.464	0.01024	1.792	Circular Pipe
	"i.p."	1319.10	440.32	457.84	442.261	1.940	53.00	1	9.68	1.46	443.72	0.000	2.277	1.360	0.01024	1.792	Circular Pipe
	"i.p."	1338.78	440.52	458.99	442.539	2.017	53.00	1	9.23	1.32	443.86	0.000	2.277	1.263	0.01024	1.792	Circular Pipe
	"i.p."	1349.38	440.63	459.61	442.729	2.098	53.00	1	8.80	1.20	443.93	0.000	2.277	1.170	0.01024	1.792	Circular Pipe
	"i.p."	1354.61	440.68	459.91	442.869	2.185	53.00	1	8.39	1.09	443.96	0.000	2.277	1.083	0.01024	1.792	Circular Pipe
"Link18"	Reach	1356.14	440.70	460.00	442.976	2.276	53.00	1	8.00	0.99	443.97	0.000	2.277	1.001	0.01024	1.792	Circular Pipe
"CB M"	Headwrk	1356.14	440.70	460.00	442.977	2.277	53.00	1	8.00	0.99	443.97	0.000	2.277	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

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SDMH8_Branch2
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Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1229.14	440.90	452.60	441.657	0.757	9.20	1	8.44	1.11	442.76	0.000	1.083	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1242.31	441.18	452.94	441.956	0.778	9.20	1	8.14	1.03	442.99	0.000	1.083	1.885	0.02118	0.723	Circular Pipe
	"i.p."	1253.20	441.41	453.23	442.215	0.806	9.20	1	7.76	0.94	443.15	0.000	1.083	1.761	0.02118	0.723	Circular Pipe
	"i.p."	1260.28	441.56	453.42	442.395	0.835	9.20	1	7.40	0.85	443.25	0.000	1.083	1.644	0.02118	0.723	Circular Pipe
	"i.p."	1265.20	441.66	453.54	442.530	0.866	9.20	1	7.06	0.77	443.30	0.000	1.083	1.534	0.02118	0.723	Circular Pipe
	"i.p."	1268.71	441.74	453.64	442.636	0.898	9.20	1	6.73	0.70	443.34	0.000	1.083	1.431	0.02118	0.723	Circular Pipe
	"i.p."	1271.22	441.79	453.70	442.723	0.931	9.20	1	6.42	0.64	443.36	0.000	1.083	1.334	0.02118	0.723	Circular Pipe
	"i.p."	1272.97	441.83	453.75	442.795	0.966	9.20	1	6.12	0.58	443.38	0.000	1.083	1.243	0.02118	0.723	Circular Pipe

	"i.p."	1274.10	441.85	453.78	442.855	1.003	9.20	1	5.83	0.53	443.38	0.000	1.083	1.158	0.02118	0.723	Circular Pipe
	"i.p."	1274.74	441.87	453.79	442.907	1.042	9.20	1	5.56	0.48	443.39	0.000	1.083	1.077	0.02118	0.723	Circular Pipe
"Link19"	Reach	1274.94	441.87	453.80	442.952	1.082	9.20	1	5.30	0.44	443.39	0.000	1.083	1.002	0.02118	0.723	Circular Pipe
"DI #5"	Headwrk	1274.94	441.87	453.80	442.953	1.083	9.20	1	5.30	0.44	443.39	0.000	1.083	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches

==========

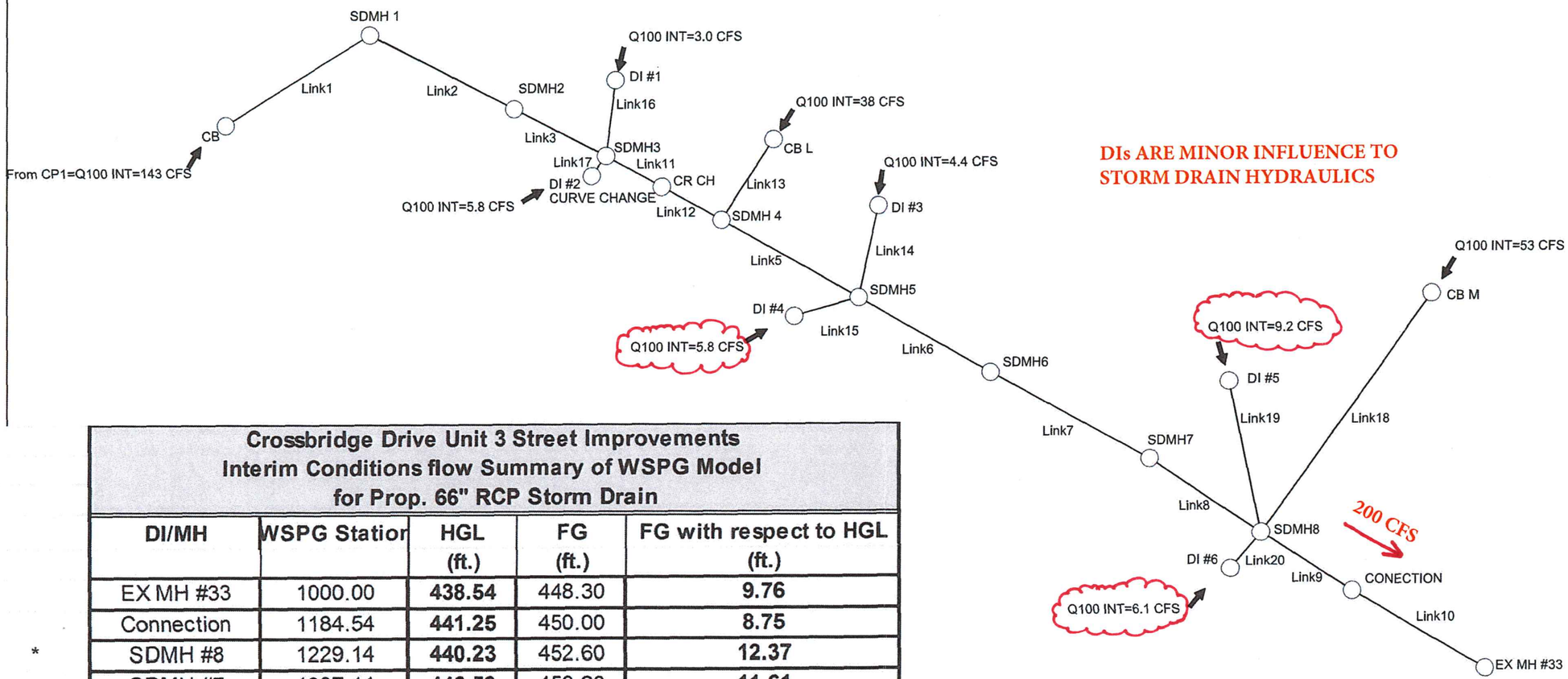
SDMH8_Branch3

==========

Composite Profile:

ELEMENT NAME	TYPE	STATION	INVERT ELEV	GROUND ELEV	W.S. ELEV	DEPTH	Q	BARREL	VELOC.	VELOC. HEAD	ENERGY GRADE LN	SUPER ELEV	CRITICAL DEPTH	FROUDE NUMBER	SLOPE	NORMAL DEPTH	CROSS SECTION
###																	
"Outlet/S"	Outlet	1229.14	441.90	452.60	442.589	0.689	6.10	1	6.36	0.63	443.22	0.000	0.874	0.000	0.00000	0.000	Circular Pipe
	"i.p."	1230.09	441.93	452.68	442.636	0.705	6.10	1	6.17	0.59	443.23	0.000	0.874	1.511	0.03333	0.519	Circular Pipe
	"i.p."	1231.29	441.97	452.79	442.702	0.730	6.10	1	5.88	0.54	443.24	0.000	0.874	1.412	0.03333	0.519	Circular Pipe
	"i.p."	1232.20	442.00	452.87	442.758	0.756	6.10	1	5.61	0.49	443.25	0.000	0.874	1.319	0.03333	0.519	Circular Pipe
	"i.p."	1232.86	442.02	452.93	442.807	0.783	6.10	1	5.35	0.44	443.25	0.000	0.874	1.232	0.03333	0.519	Circular Pipe
	"i.p."	1233.30	442.04	452.97	442.851	0.812	6.10	1	5.10	0.40	443.25	0.000	0.874	1.151	0.03333	0.519	Circular Pipe
	"i.p."	1233.56	442.05	452.99	442.889	0.842	6.10	1	4.86	0.37	443.26	0.000	0.874	1.074	0.03333	0.519	Circular Pipe
"Link20"	Reach	1233.64	442.05	453.00	442.923	0.873	6.10	1	4.63	0.33	443.26	0.000	0.874	1.002	0.03333	0.519	Circular Pipe
"DI #6"	Headwrk	1233.64	442.05	453.00	442.924	0.874	6.10	1	4.63	0.33	443.26	0.000	0.874	0.000	0.00000	0.000	Circular Pipe

*) in the W.S.ELEV column indicates flooding, it is set whenever W.S.ELEV > GROUND ELEV
i.p. = intermediate point processing results for reaches



Crossbridge Drive Unit 3 Street Improvements
Interim Conditions flow Summary of WSPG Model
for Prop. 66" RCP Storm Drain

	DI/MH	WSPG Station	HGL (ft.)	FG (ft.)	FG with respect to HGL (ft.)
	EX MH #33	1000.00	**438.54**	448.30	**9.76**
	Connection	1184.54	**441.25**	450.00	**8.75**
*	SDMH #8	1229.14	**440.23**	452.60	**12.37**
	SDMH #7	1337.14	**446.59**	458.20	**11.61**
	SDMH #6	1490.54	**456.78**	468.70	**11.92**
*	SDMH #5	1892.14	**484.46**	496.60	**12.14**
*	SDMH #4	2170.64	**503.95**	516.00	**12.05**
*	SDMH #3	2425.74	**521.53**	533.50	**11.97**
	SDMH #2	2833.44	**548.37**	558.90	**10.53**
	SDMH #1	2968.56	**552.66**	563.70	**11.04**
	CB	3086.54	**554.51**	570.00	**15.49**

* Station is at the end of the Manhole

COLLINS ENGINEERS
2033 West Howard Ave.
Milwaukee, WI 53221
Phone: 414-282-6905
Fax: 414-282-6955

Client

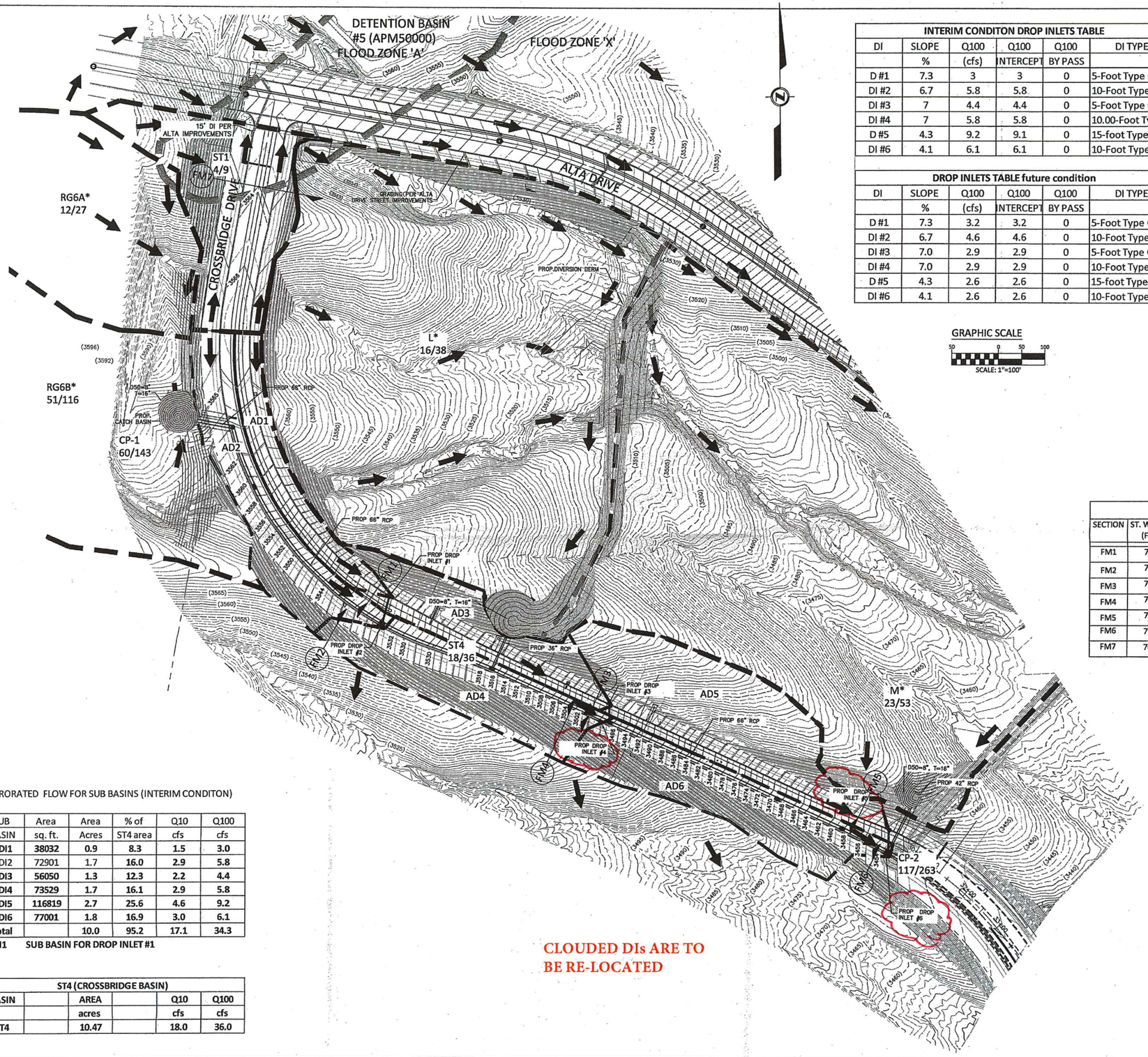
Or place Client Logo here

Address

SUMMERLIN VILLAGE 24
CROSSBRIDGE DRIVE UNIT 3 STREET
IMPROVEMENTS, APN:137-33-8
WSPG MODEL PLAN FRO 66" RCP

90106

INSPECTED BY: SAM
DRAWN BY: SAM
CHECKED BY: SAM
DATE: 02/08/16



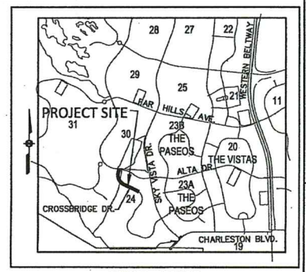
INTERIM CONDITON DROP INLETS TABLE					
DI	SLOPE	Q100	Q100	Q100	DI TYPE
	%	(cfs)	INTERCEPT	BY PASS	
D #1	7.3	3	3	0	5-Foot Type CM
DI #2	6.7	5.8	5.8	0	10-Foot Type CM
DI #3	7	4.4	4.4	0	5-Foot Type CM
DI #4	7	5.8	5.8	0	10.00-Foot Type CI
D #5	4.3	9.2	9.1	0	15-foot Type CM
DI #6	4.1	6.1	6.1	0	10-Foot Type CM

DROP INLETS TABLE future condition					
DI	SLOPE	Q100	Q100	Q100	DI TYPE
	%	(cfs)	INTERCEPT	BY PASS	
D #1	7.3	3.2	3.2	0	5-Foot Type CM
DI #2	6.7	4.6	4.6	0	10-Foot Type CM
DI #3	7.0	2.9	2.9	0	5-Foot Type CM
DI #4	7.0	2.9	2.9	0	10-Foot Type CM
D #5	4.3	2.6	2.6	0	15-foot Type CM
DI #6	4.1	2.6	2.6	0	10-Foot Type CM

GRAPHIC SCALE

50 0 50 100

SCALE: 1"=100'



VICINITY MAP
NTS

DRAINAGE AREA SUMMARY TABLE			
BASIN ID	AREA (ACRES)	Q_{10} (CFS)	Q_{100} (CFS)
ST1	2.50	4	9
ST4	10.47	18	36
RG6A*	9.60	12	27
RG6B*	43.0	51	116
L*	14.55	16	38
M*	19.37	23	53

CONCENTRATION POINT SUMMARY TABLE		
CONCENTRATION POINT	Q_{10} (CFS)	Q_{100} (CFS)
CP-1	63	143
CP-2	117	263

FLOW DEPTH ANALYSIS SUMMARY										
SECTION	ST. WIDTH (FT)	SLOPE (%)	Q_{100} (CFS)	D_{100} (ft)	V_{100} (ft/sec)	$D_{100} \times V_{100}$	Q_{10}	D_{10} (ft)	V_{10} (ft/sec)	$D_{10} \times V_{10}$
FM1	76	7.3	3.0	0.27	5.02	1.36	1.5	0.22	4.56	1.00
FM2	76	6.7	5.8	0.33	5.54	1.83	2.9	0.27	4.82	1.30
FM3	76	7.0	4.4	0.31	5.48	1.70	2.3	0.25	4.82	1.21
FM4	76	7.0	5.8	0.32	5.62	1.80	2.9	0.27	4.91	1.33
FM5	76	4.3	9.2	0.39	5.18	2.02	4.6	0.33	4.43	1.46
FM6	76	4.1	6.1	0.35	4.62	1.62	3.0	0.29	3.96	1.15
FM7	70	1.0	9.0	0.42	2.07	1.05	4.0	0.34	2.10	0.71

DRAINAGE LEGEND

$(Q_{10/100})$	PEAK 10 YR FLOW / PEAK 100 YR FLOW
	DRAINAGE AREA BOUNDARY
	DRAINAGE AREA FLOW DIRECTION
OND1	AREA DESIGNATION
CP1 ●	CONCENTRATION FLOW POINT
FM1	LOCATION OF HYDRAULIC CROSS SECTION

FLOOD ZONE NOTE:
THE PROJECT SITE LIES WITHIN FLOOD ZONE "A". PER FIRM PANEL 32003C2150 E AND 2125 E REVISED SEPTEMBER 27, 2002. PER FEMA, FLOOD ZONE "A" IS AN AREA IN THE 100-YEAR FLOODPLAIN.

PRORATED FLOW FOR SUB BASINS (INTERIM CONDITON)

SUB BASIN	Area sq. ft.	Area Acres	% of ST4 area	Q10 cfs	Q100 cfs
ADI1	**38032**	**0.9**	**8.3**	**1.5**	**3.0**
ADI2	72901	1.7	16.0	2.9	5.8
ADI3	**56050**	**1.3**	**12.3**	**2.2**	**4.4**
ADI4	**73529**	**1.7**	**16.1**	**2.9**	**5.8**
ADI5	**116819**	**2.7**	**25.6**	**4.6**	**9.2**
ADI6	**77001**	**1.8**	**16.9**	**3.0**	**6.1**
Total		**10.0**	**95.2**	**17.1**	**34.3**

***ADI1 SUB BASIN FOR DROP INLET #1**

ST4 (CROSSBRIDGE BASIN)					
BASIN		**AREA**		**Q10**	**Q100**
		acres		cfs	cfs
ST4		**10.47**		**18.0**	**36.0**

COLLINS ENGINEERS, INC.
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

NOT FOR CONSTRUCTION

NO.	DESCRIPTION OF REVISIONS	DATE	APPROVAL

THE HOWARD HUGHES COMPANY, LLC.

VILLAGE 24 CROSSBRIDGE DRIVE UNIT 3 STREET IMPROVEMENTS

SUB BASINS AND PRORATED FLOWS

DATE:	8/20/15
JOB NUMBER:	9106
DESIGNED:	SAM
DRAWN:	SAM
CHECKED:	SAM

SHEET NUMBER

FIG 7-A

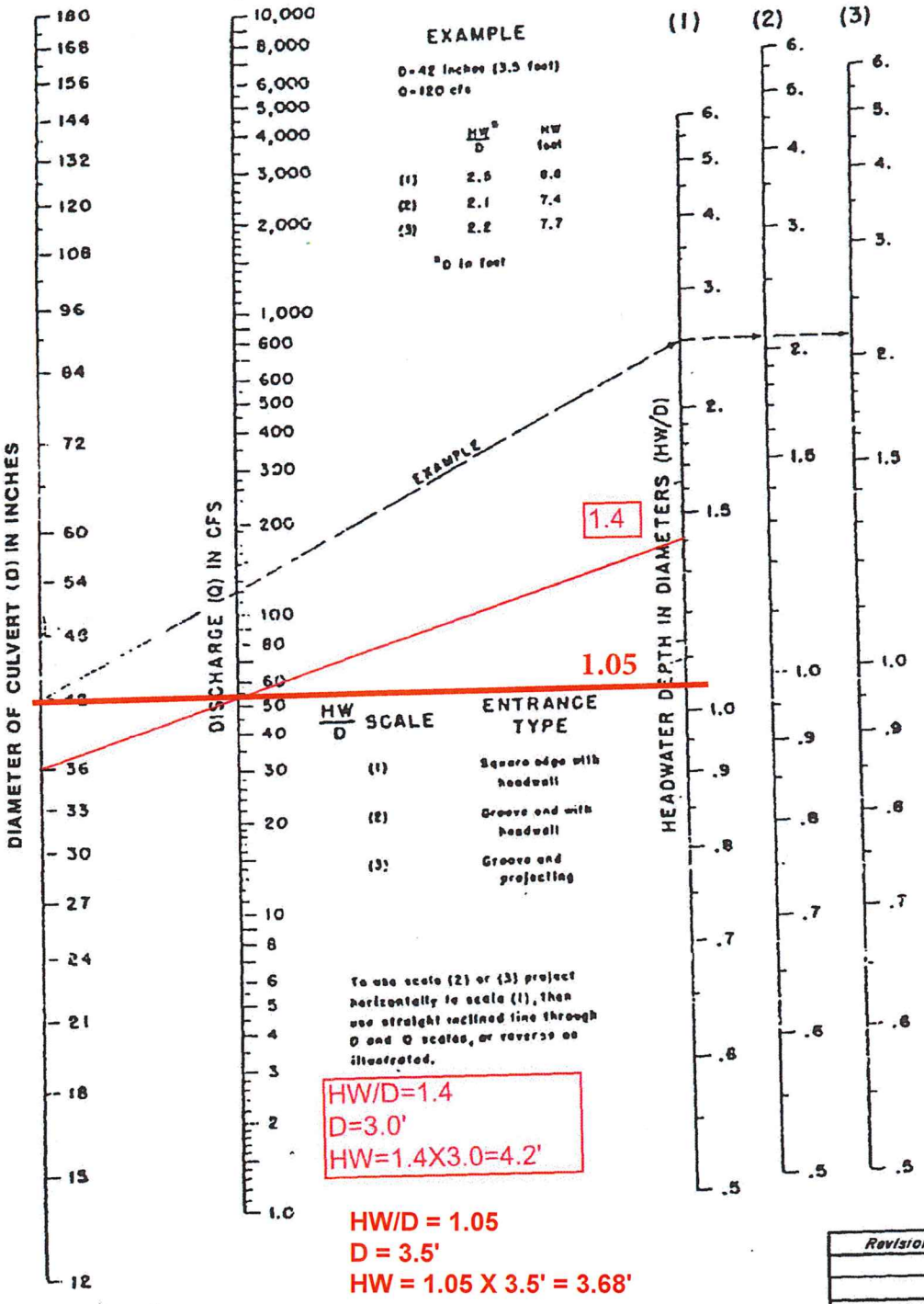
SID#____ PROJECT#_9106

CAD FILE: H:\Civil\Land\9106\ADMIN\Drainage\CROSSBRIDGE\TDSV\ADD1\DWG\FIG 7 --CROSSB.dwg PLOT DATE/TIME: 2/9/2016 -- 9:19am

REVISED CALCULATIONS FROM 42" RCP NOT 36" RCP

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH – INLET CONTROL RCP



Revision	Date

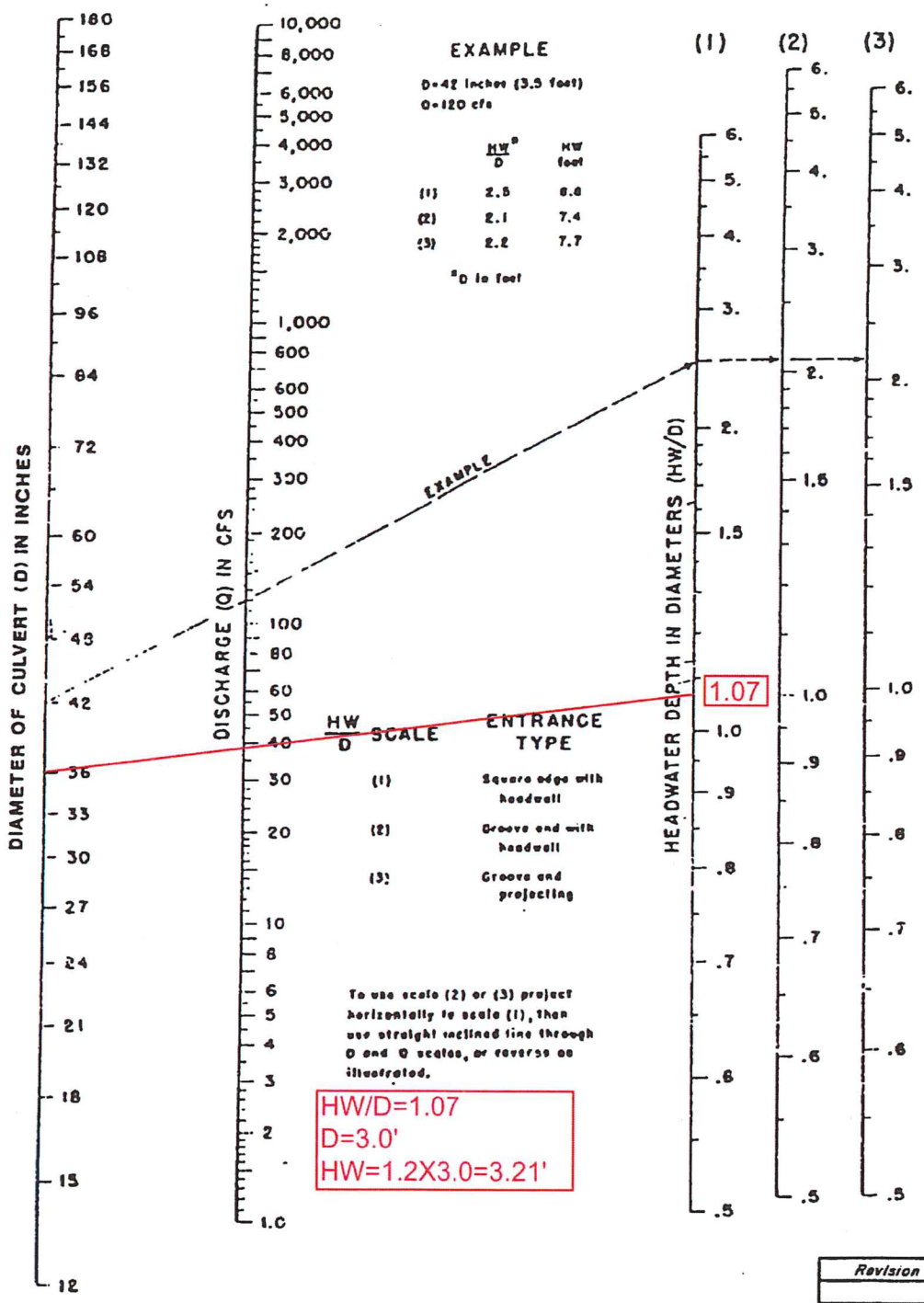
WRC ENGINEERING

REFERENCE: USDOT, FHWA, HDS, No. 5, 1985

FIGURE 1005

INLET CONTROL FOR PROP 36" RCP FROM BASIN M*

NOMOGRAPH – INLET CONTROL RCP



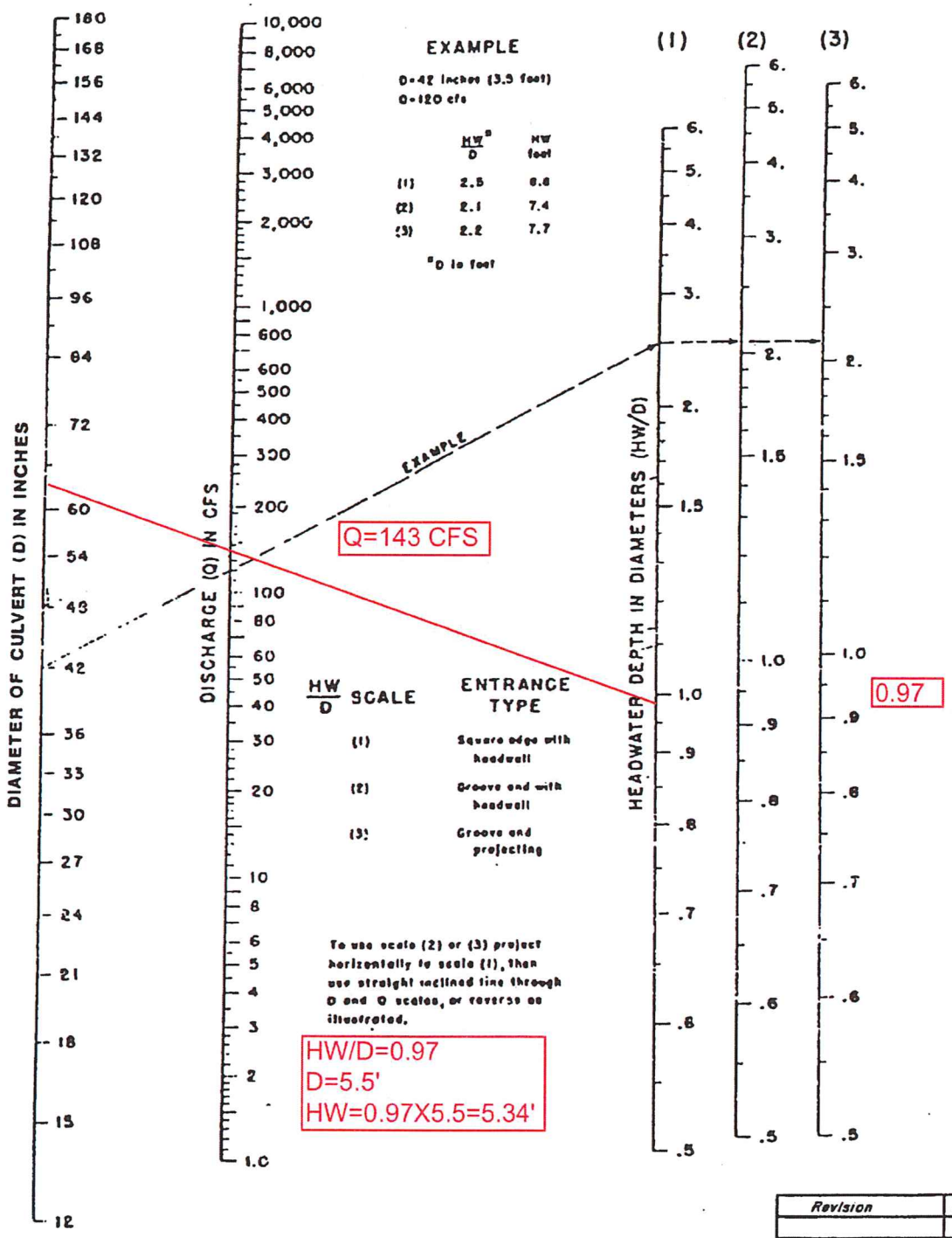
Revision	Date

WRC ENGINEERING	REFERENCE: USDOT, FHWA, HDS, No. 5, 1985	FIGURE 1005

INLET CONTROL FOR PROP 36" RCP FROM BASIN L*

HYDROLOGIC CRITERIA AND DRAINAGE DESIGN MANUAL

NOMOGRAPH – INLET CONTROL RCP



Revision	Date

WRC ENGINEERING

REFERENCE:
USDOT, FHWA, HDS, No. 5, 1985

FIGURE 1005

INLET CONTROL FOR PROP 66" RCP FROM CP-1

SUMMERLIN

SM

VILLAGE 24
CROSSBRIDGE DRIVE UNIT 3
STREET IMPROVEMENT PLANS

FROM ALTA DRIVE TO CROSSBRIDGE UNIT 2
SID #812 PROJECTS 10A & B

2015
A.P.N. 137-33-601-001

REV#	REV. DESCRIPTION	SHEET(S)	APPD BY	DATE

SHEET INDEX

1.	C1.01	COVER AND APPROVAL SHEET
2.	C1.02	GENERAL NOTES SHEET
3.	C3.01	HORIZONTAL CONTROL PLAN
4.	C4.01	MASTER GRADING PLAN
5.	C5.00	SEWER MASTER PLAN
6.	C5.01	STORM DRAIN MASTER PLAN
7.	C5.02	WATER MASTER PLAN
8.	C5.03	UTILITY PLAN AND PROFILE – STA:5+87.51 TO 10+00.00
9.	C5.04	UTILITY PLAN AND PROFILE – STA:10+00.00 TO 14+50.00
10.	C5.05	UTILITY PLAN AND PROFILE – STA:14+50.00 TO 19+00.00
11.	C5.06	UTILITY PLAN AND PROFILE – STA:19+00.00 TO 23+50.00
12.	C5.07	UTILITY PLAN AND PROFILE – STA:23+50.00 TO 28+00.00
13.	C5.08	UTILITY PLAN AND PROFILE – STA:28+00.00 TO 30+63.00
14.	C5.09	UTILITY LATERALS 1
15.	C5.10	UTILITY LATERALS 2
16.	C5.11	UTILITY LATERALS 3
17.	C5.12	ROUGH GRADING PLAN 1
18.	C5.13	ROUGH GRADING PLAN 2
19.	C6.01	SIGNAGE AND STRIPING PLAN 1
20.	C6.02	SIGNAGE AND STRIPING PLAN 2
21.	C6.03	STREET LIGHTING PLAN 1
22.	C6.04	STREET LIGHTING PLAN 2
23.	C8.01	DETAILS SHEET 1
24.	C8.02	DETAILS SHEET 2
25.	C8.03	DETAILS SHEET 3
26.	C8.04	DETAILS SHEET 4

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

APPROVALS

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

ALLEN PAVELKA, PE #9029 — 10-4-17
CITY ENGINEER — DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE 8/31/17 PROJECT NO. 124606
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL
(SHEETS: C1.01, C1.02 and C4.01, C5.02–C5.11, C5.13, C6.03, C6.04, C8.01, C8.04)

LAS VEGAS FIRE & RESCUE — 8/29/17 DATE

N/A
CITY OF LAS VEGAS PLANNING DEPARTMENT — DATE
THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

THE HOWARD HUGHES COMPANY, LLC

N/A
KEVIN ORROCK — DATE
TITLE VICE PRESIDENT

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.

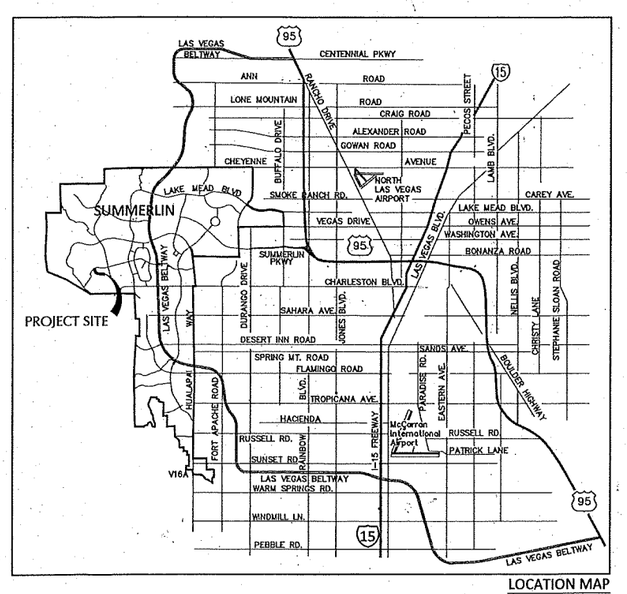
Barbara Garrison — 8-24-17
NV ENERGY — DATE

"THE AFFIXED CENTURYLINK CORPORATION 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."

Shelley Olsen — 8/24/17
CENTRAL TELEPHONE CO. D/B/A CENTURY LINK — DATE

9/12/17
COX COMMUNICATIONS LAS VEGAS, INC. — DATE

9.14.17
SOUTHWEST GAS CORPORATION — DATE
10TV7063



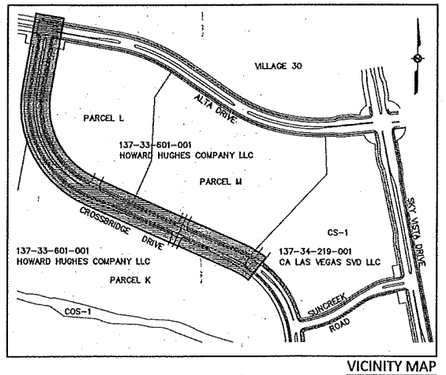
LOCATION MAP
NTS

LEGAL DESCRIPTION

THAT PORTION OF PARCEL 2 AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE LYING WITHIN SECTIONS 33 AND 34, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AND SECTIONS 3 AND 4, TOWNSHIP 21 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA.

OWNER/DEVELOPER

HOWARD HUGHES COMPANY, LLC
10801 CHARLESTON BLVD., 3RD FLOOR
LAS VEGAS, NEVADA 89146
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450



VICINITY MAP
NTS

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES L. YANCEY
Exp. 06-30-19
CIVIL
NO. 016109
8/23/17

IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

COVER SHEET
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

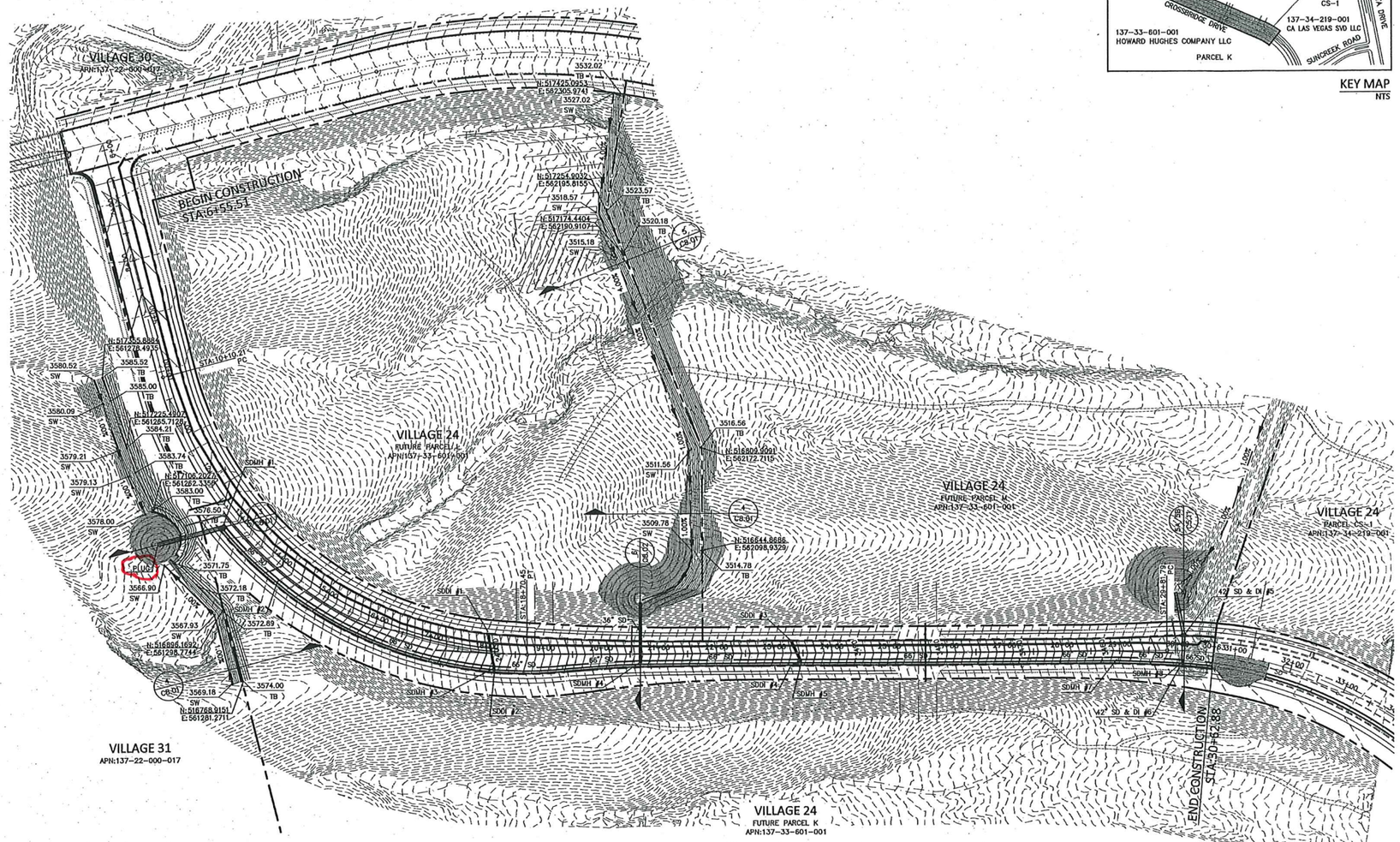
NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	N/A
SHEET NUMBER	C1.01
	SHEET 1 OF 26

PROJ#:124606 AGR:116009 QS:137-33-NE

11652.76

H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-C1.01-CV.DWG 08/23/2017 10:30:16 AM


VILLAGE 30
APN:137-22-000-017
BEGIN CONSTRUCTION
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N:517425.0953
E:562305.9741
3532.02
TB
3527.02
SW
N:517254.9092
E:562195.8155
3523.57
TB
3518.57
SW
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E:562190.9107
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TB
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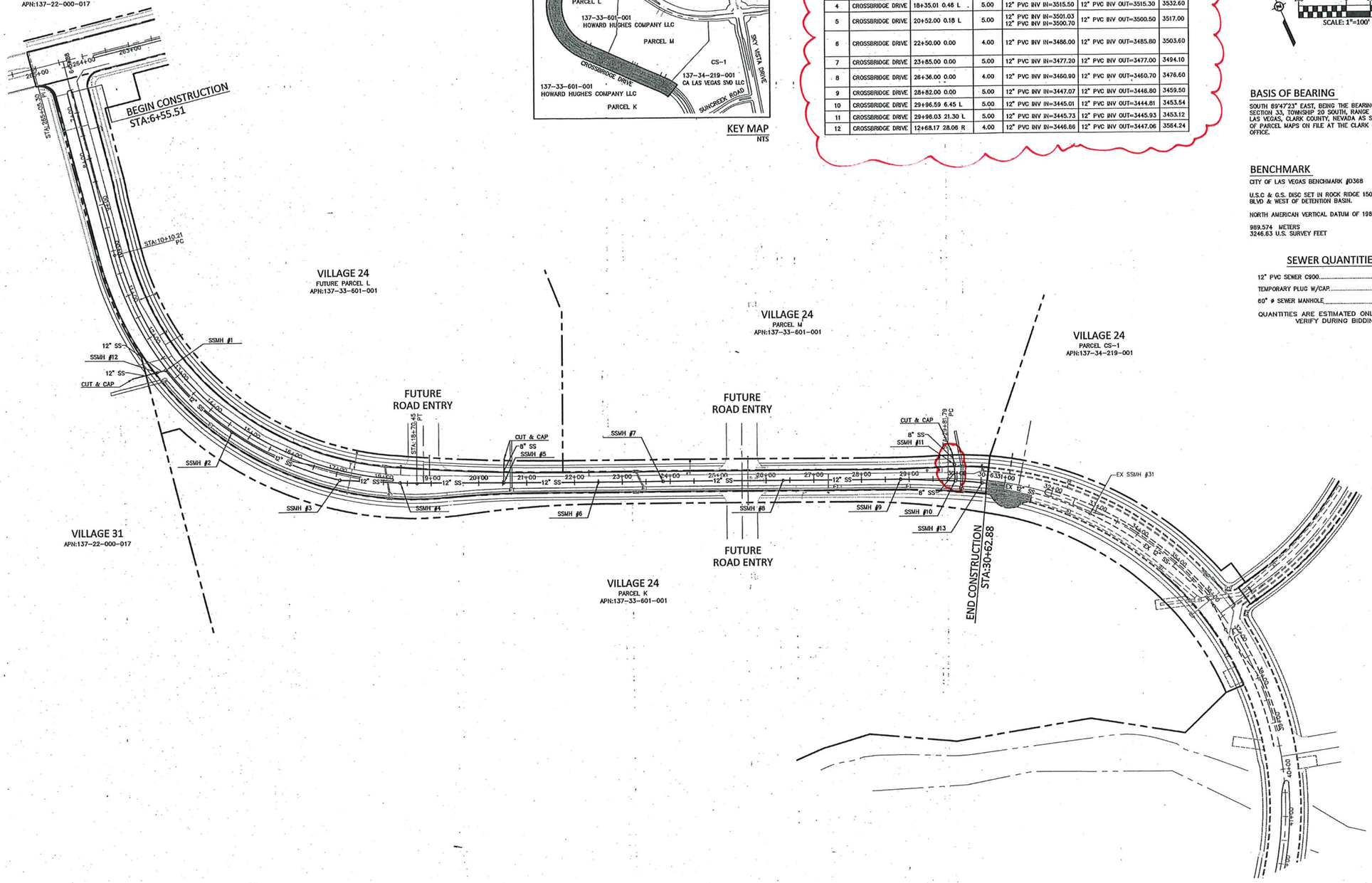

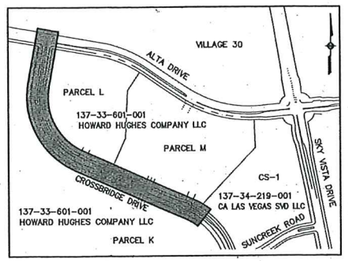

KEY MAP
NTS

SANITARY SEWER MANHOLE TABLE

SSMH#	STREET NAME	STATION & OFFSET	MH SIZE	PIPES IN:	PIPES OUT	RIM
1	CROSSBRIDGE DRIVE	12+75.00 11.50 R	5.00	12" PVC INV IN=3546.63	12" PVC INV OUT=3546.30	3564.40
2	CROSSBRIDGE DRIVE	14+64.14 11.50 R	4.00	12" PVC INV IN=3539.20	12" PVC INV OUT=3539.00	3557.08
3	CROSSBRIDGE DRIVE	17+10.00 11.50 R	5.00	12" PVC INV IN=3523.70	12" PVC INV OUT=3523.50	3541.10
4	CROSSBRIDGE DRIVE	18+35.01 0.46 L	5.00	12" PVC INV IN=3515.50	12" PVC INV OUT=3515.30	3532.60
5	CROSSBRIDGE DRIVE	20+52.00 0.18 L	5.00	12" PVC INV IN=3501.03 12" PVC INV IN=3500.70	12" PVC INV OUT=3500.50	3517.00
6	CROSSBRIDGE DRIVE	22+50.00 0.00	4.00	12" PVC INV IN=3486.00	12" PVC INV OUT=3485.80	3503.60
7	CROSSBRIDGE DRIVE	23+85.00 0.00	5.00	12" PVC INV IN=3477.20	12" PVC INV OUT=3477.00	3494.10
8	CROSSBRIDGE DRIVE	26+36.00 0.00	4.00	12" PVC INV IN=3460.90	12" PVC INV OUT=3460.70	3476.60
9	CROSSBRIDGE DRIVE	28+82.00 0.00	5.00	12" PVC INV IN=3447.07	12" PVC INV OUT=3446.80	3459.50
10	CROSSBRIDGE DRIVE	29+96.59 6.45 L	5.00	12" PVC INV IN=3445.01	12" PVC INV OUT=3444.81	3453.54
11	CROSSBRIDGE DRIVE	29+98.03 21.30 L	5.00	12" PVC INV IN=3445.73	12" PVC INV OUT=3445.93	3453.12
12	CROSSBRIDGE DRIVE	12+68.17 28.06 R	4.00	12" PVC INV IN=3446.86	12" PVC INV OUT=3447.06	3564.24

GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #0368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

SEWER QUANTITIES (PUBLIC)

12" PVC SEWER C900	1806 LF
TEMPORARY PLUG W/CAP	3 EA
60" ø SEWER MANHOLE	13 EA

QUANTITIES ARE ESTIMATED ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-385-7011
CLARK COUNTY TRAFFIC OPERATIONS AND SYSTEMS MANAGEMENT
CALL 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED	
(0.00) XXX	0.00 XXX	ELEVATION TAG
		DRAIN INLET
		RETAINING WALL
		SCREEN WALL
		UTILITY POLE
		STREET LIGHT
		POWER LINE/POLE
		TELEPHONE LINE
		WATER LINE
		SANITARY SEWER LINE
		STORM SEWER LINE
		GAS LINE
		STORM MANHOLE
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		REDUCER
		SEWER MANHOLE
		CLEANOUT
		GAS VALVE
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SIGN W/POLE
		SAWCUT LINE
		AREA LIGHT
		WATER METER
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "A" CURB & GUTTER
		30" ROLL CURB
	BWV	BACK WATER VALVE

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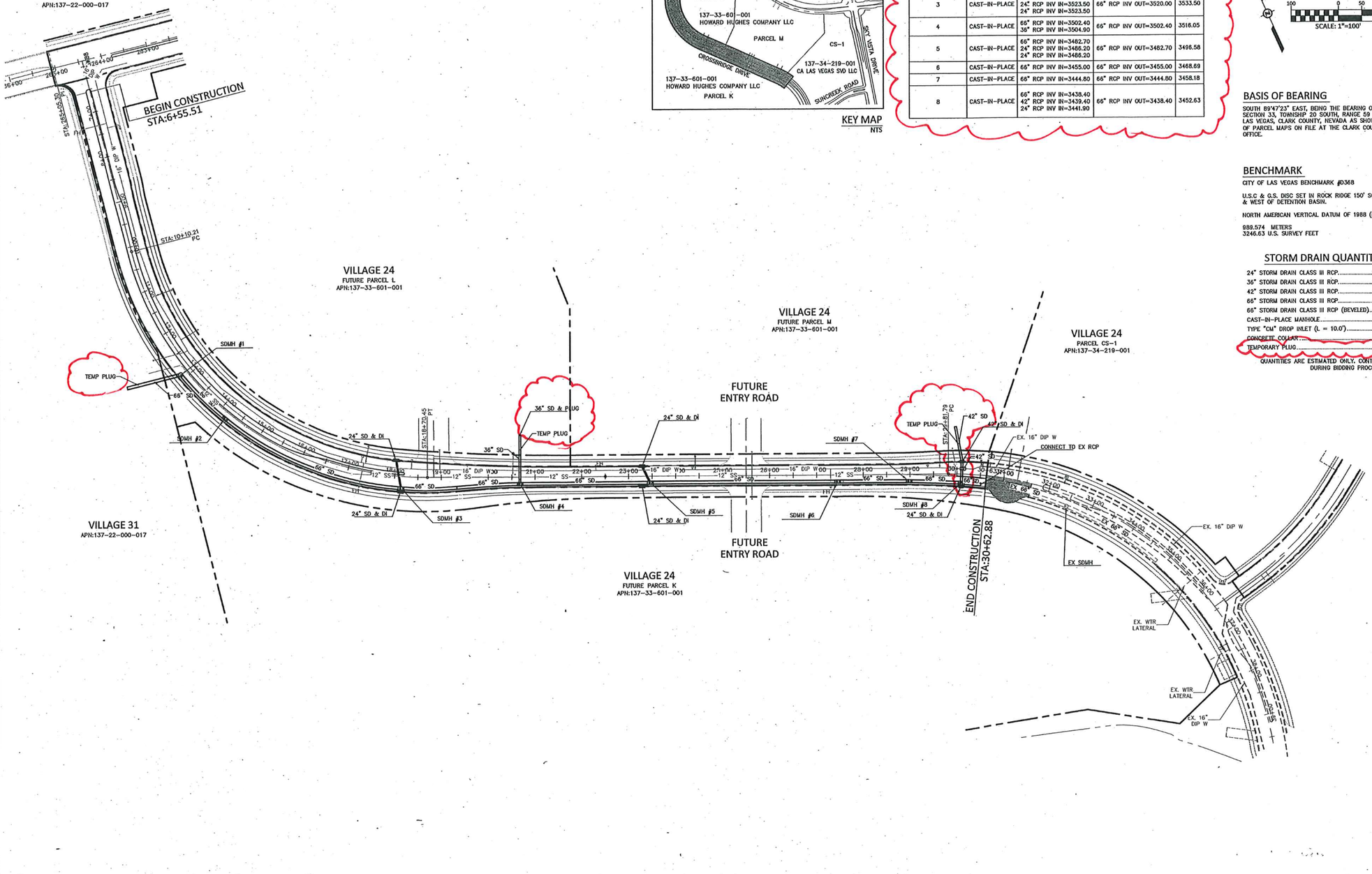
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

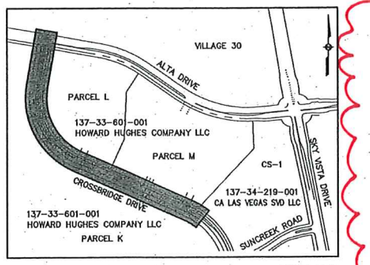
PROFESSIONAL ENGINEER — STATE OF NEVADA
JAMES A. YANCEY
EXP. 06/30/18
CIVIL
NO. 01 8109
10/2/17

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
SEWER MASTER PLAN
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=100
SHEET NUMBER C5.00
SHEET 5 OF 26
H65276





KEY MAP
NTS

STORM DRAIN MANHOLE TABLE

SDMH#	MH TYPE	PIPES IN:	PIPES OUT	RIM
1	CAST-IN-PLACE	66" RCP INV IN=3550.00	66" RCP INV OUT=3550.00	3563.72
2	CAST-IN-PLACE	66" RCP INV IN=3546.30	66" RCP INV OUT=3546.30	3558.94
3	CAST-IN-PLACE	66" RCP INV IN=3520.00 24" RCP INV IN=3523.50 24" RCP INV IN=3523.50	66" RCP INV OUT=3520.00	3533.50
4	CAST-IN-PLACE	66" RCP INV IN=3502.40 36" RCP INV IN=3504.90	66" RCP INV OUT=3502.40	3516.05
5	CAST-IN-PLACE	66" RCP INV IN=3482.70 24" RCP INV IN=3486.20 24" RCP INV IN=3486.20	66" RCP INV OUT=3482.70	3498.58
6	CAST-IN-PLACE	66" RCP INV IN=3455.00	66" RCP INV OUT=3455.00	3468.69
7	CAST-IN-PLACE	66" RCP INV IN=3444.80	66" RCP INV OUT=3444.80	3458.18
8	CAST-IN-PLACE	66" RCP INV IN=3438.40 42" RCP INV IN=3439.40 24" RCP INV IN=3441.90	66" RCP INV OUT=3438.40	3452.63

GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

STORM DRAIN QUANTITIES (PUBLIC)

24" STORM DRAIN CLASS III RCP	131	LF
36" STORM DRAIN CLASS III RCP	105	LF
42" STORM DRAIN CLASS III RCP	122	LF
66" STORM DRAIN CLASS III RCP	797	LF
66" STORM DRAIN CLASS III RCP (BEVELED)	1009	LF
CAST-IN-PLACE MANHOLE	8	EA
TYPE "CM" DROP INLET (L = 10.0')	6	EA
CONCRETE COLLAR	1	EA
TEMPORARY PLUG	3	EA

QUANTITIES ARE ESTIMATED ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811 or 1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511 CLARK COUNTY TRAFFIC SIGNALS AND CALL 1-702-432-5300 FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

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LEGEND

EXISTING	PROPOSED	
(0.00)	0.00	ELEVATION TAG
XXX	XXX	
		DRAIN INLET
		RETAINING WALL
		SCREEN WALL
		UTILITY POLE
		STREET LIGHT
--E#--	—E#—	POWER LINE/POLE
--T--	—T—	TELEPHONE LINE
--W--	—W—	WATER LINE
--SS--	—SS—	SANITARY SEWER LINE
--D--	—D—	STORM SEWER LINE
--G--	—G—	GAS LINE
(D)	(D)	STORM MANHOLE
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		REDUCER
(S)	(S)	SEWER MANHOLE
		CLEANOUT
		GAS VALVE
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SIGN W/POLE
		SAWCUT LINE
		AREA LIGHT
		WATER METER
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
	(BW)	BACK WATER VALVE

107V7063

COLLINS ENGINEERS, INC.
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-18
CIVIL
NO. 01 6109

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC APN: 137-33-601-001

STORM DRAIN MASTER PLAN
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=100

SHEET NUMBER
C5.01
SHEET 6 OF 26

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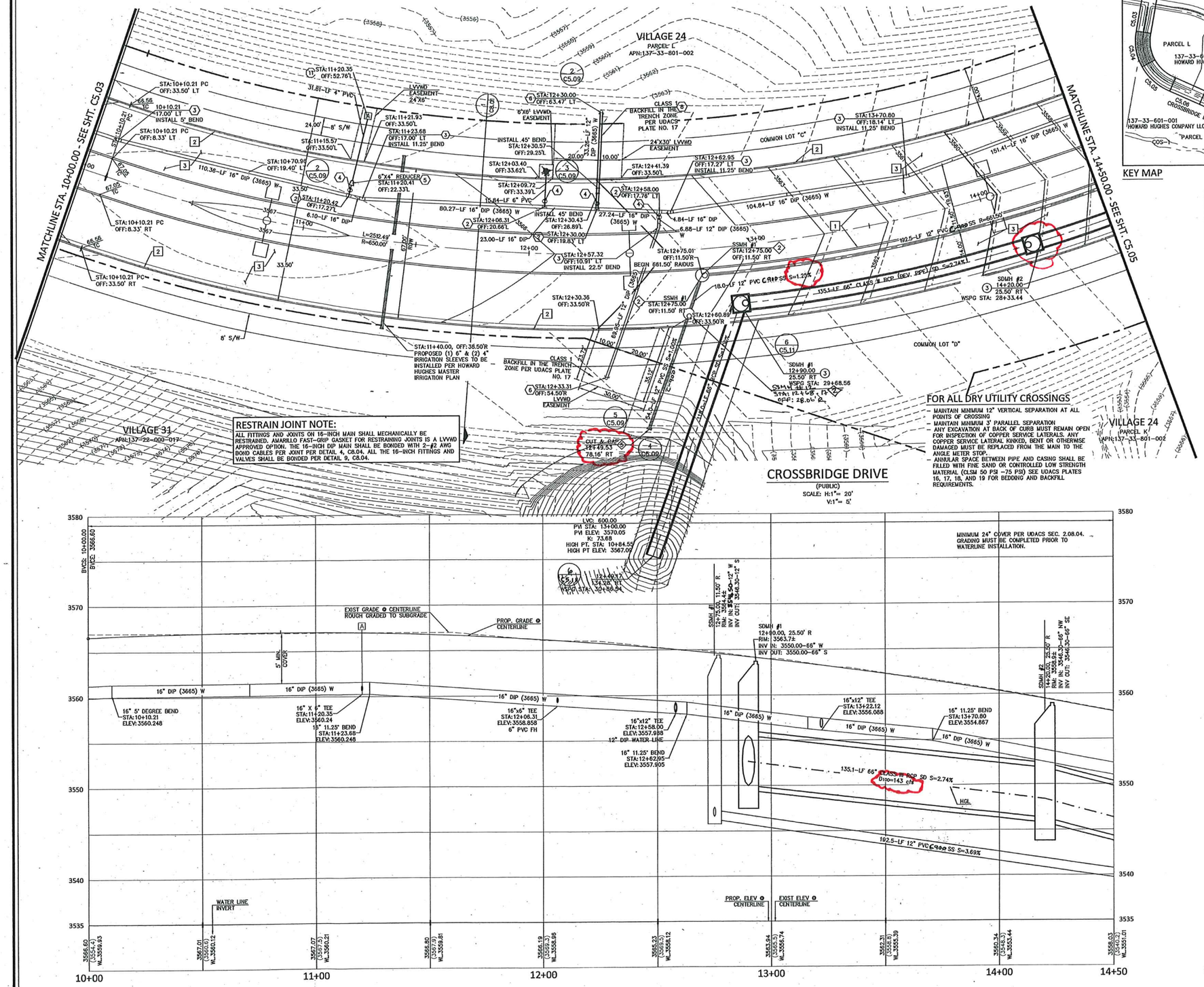

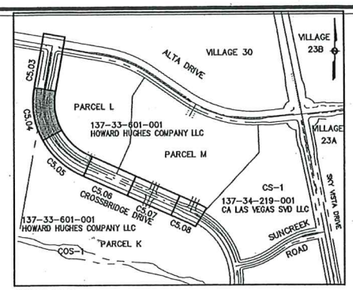

KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW-OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS I BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	~~INSTALL 48" SEWER MANHOLE WITH SINGLE LID~~ NOT USED
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
3	~~INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID~~
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST-IN-PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	NOT USED
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"-24")

DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH-ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: 8/31/17 PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS INC
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-18
CIVIL
NO. 16109

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY PLAN & PROFILE
STA. 10+00.00 TO 14+50.00
SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DESCRIPTION	DATE	DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.04
107V7063
SHEET 9 OF 26
H45276

PROJ#:124806 AGR:116009 QS:137-33-NE

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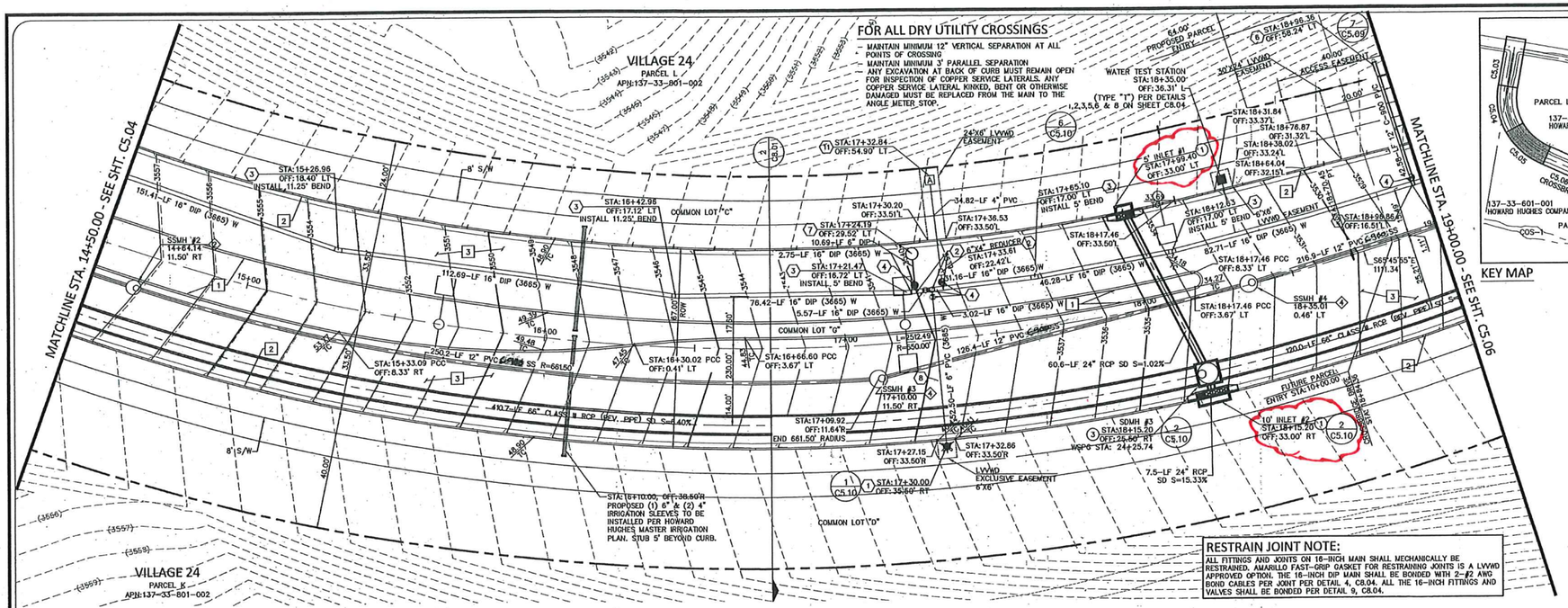

RESTRAIN JOINT NOTE:

ALL FITTINGS AND JOINTS ON 16-INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST-GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16-INCH DIP MAIN SHALL BE BONDED WITH 2-#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16-INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW-OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)

* SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
~~1~~	~~INSTALL 48" SEWER MANHOLE WITH SINGLE LID~~ NOT USED
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
~~3~~	~~INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID~~
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST-IN-PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	NOT USED
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14'-24')

DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH-ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE - LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE 8/31/17 PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

CROSSBRIDGE DRIVE

(PUBLIC)
SCALE: H:1"= 20'
V:1"= 5'

LVC: 600.00
PVI STA: 13+00.00
PVI ELEV: 3570.05
K: 73.68

EXCS: 16+00.00 ELEV: 3549.06

MINIMUM 24" COVER PER UDACS SEC. 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

EXIST GRADE ℄ CENTERLINE ROUGH GRADED TO SUBGRADE
PROP. GRADE ℄ CENTERLINE
16" 11.25° BEND STA:15+26.96 ELEV:3547.270
16" DIP (3685) W
HGL
192.5-LF 12" PVC C-900 SS S=4.68%
SSMH #2 14+64.14 11.50' RT RIM: 3557.11 INV IN: 3539.20-12" NW INV OUT: 3539.00-12" SE
410.7-LF 66" CLASS III RCP SD S=8.40% D100=143 cfs
250.2-LF 12" PVC C-900 SS S=6.11%
16" 11.25° BEND STA:16+42.98 ELEV:3539.006
5' MIN. COVER
SSMH #3 17+10.00 11.50' RT RIM: 3541.12 INV IN: 3522.70-24" NW INV OUT: 3523.50-12" SE
BG
A
16" 5° BEND STA:17+21.47 ELEV:3533.657
7.00%
PROP. GRADE ℄ CENTERLINE
16"x6" TEE STA:17+24.10 ELEV:3533.477
16" GATE VALVE STA:17+27.71 ELEV:3533.231
1.78
16"x6" TEE STA:17+32.84 ELEV:3532.881
16"x16" TEE FH STA:17+30.00 ELEV:3533.492
16" 5° BEND STA:17+65.10 ELEV:3530.682
16" 5° BEND STA:18+12.63 ELEV:3527.443
SSMH #3 18+15.20 25.50' R RIM: 3535.0 INV IN: 3520.00-66" NW INV IN: 3522.50-24" N INV IN: 3520.00-66" SE INV OUT: 3520.00-66" S
SSMH #4 18+35.01 0.46' L RIM: 3532.04 INV IN: 3515.50-12" NW INV OUT: 3515.30-12" SE
16"x12" TEE STA:18+98.86 ELEV:3521.747
HGL
120.0-LF 66" ASTM C76 CL III (350 D-LOAD) RCP SD IN 6000 PSI MIN. WITH 1"-SACRIFICIAL CONCRETE Q100 =150.7 cfs
STA: 19+00.0 CONTINUED NEXT SHEET
PROP. ELEV ℄ CENTERLINE
EXIST ELEV ℄ CENTERLINE
372.29' INSTALL RESTRAINED JOINTS ON 16" W.L.
216.9-LF 12" PVC C-900 SS S=6.33%
WATER LINE INVERT
3560
3550
3540
3530
3520
3510
3558.03 (3540.2) WL:3551.01
3556.38 (3538.8) WL:3548.58
3553.39 (3536.8) WL:3545.63
3549.06 (3535.7) WL:3542.07
3545.56 (3536.7) WL:3538.53
3542.06 (3536.7) WL:3535.12
3538.57 (3535.0) WL:3531.71
3535.07 (3534.7) WL:3528.30
3531.57 (3534.4) WL:3524.90
3528.07 (3534.6) WL:3521.54
14+50
15+00
16+00
17+00
18+00
19+00

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COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES A. YANNEY
EXP. 06-30-18
CIVIL
NO. 016109

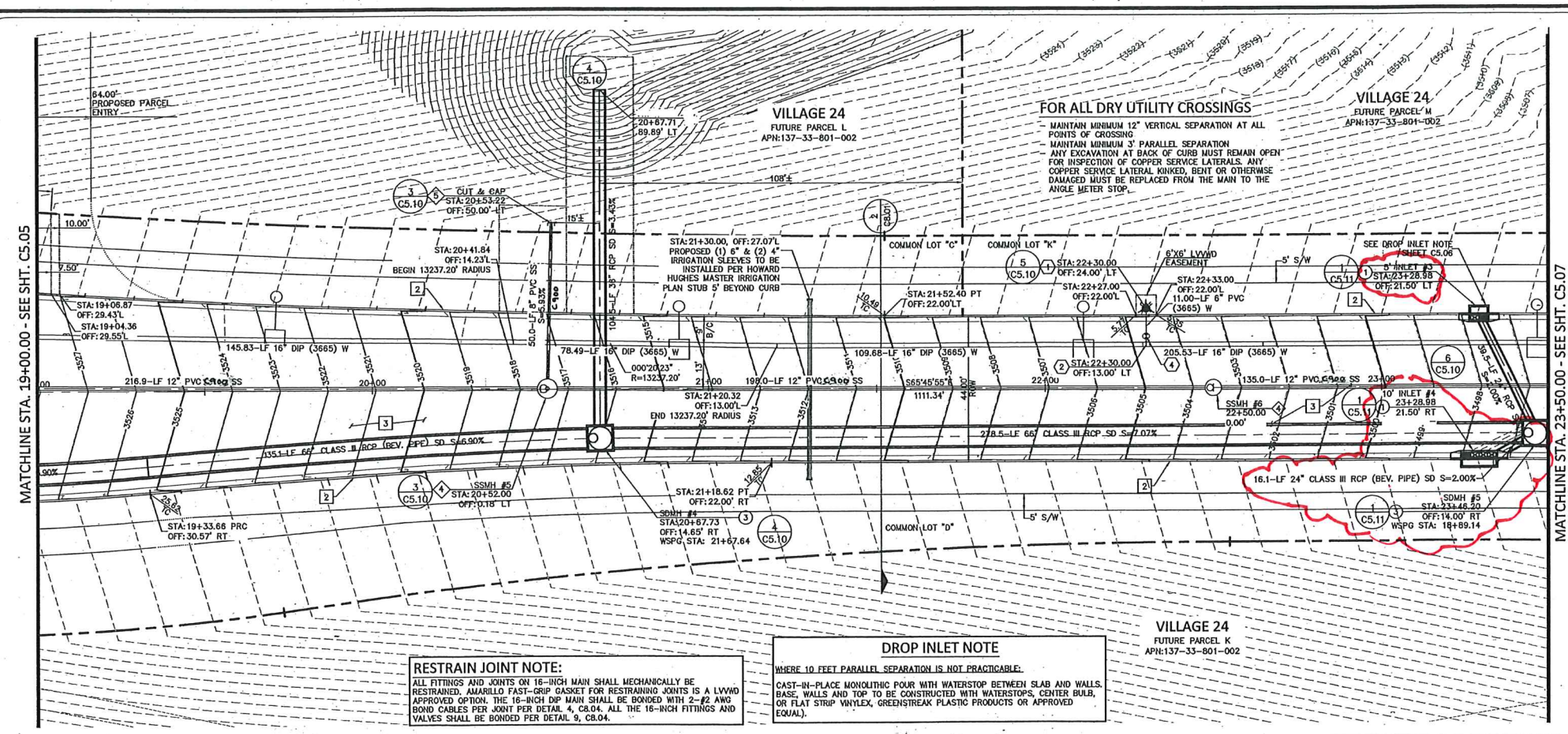
IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

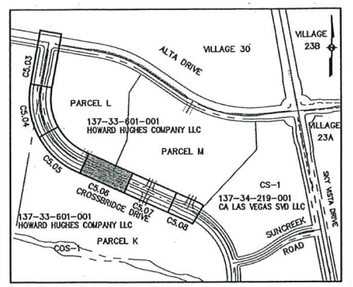
APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 14+50.00 TO 19+00.00
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.05
107V7063
SHEET 10 OF 26
H46276

PROJ#:124806 AGR:116009 QS:137-33-NE



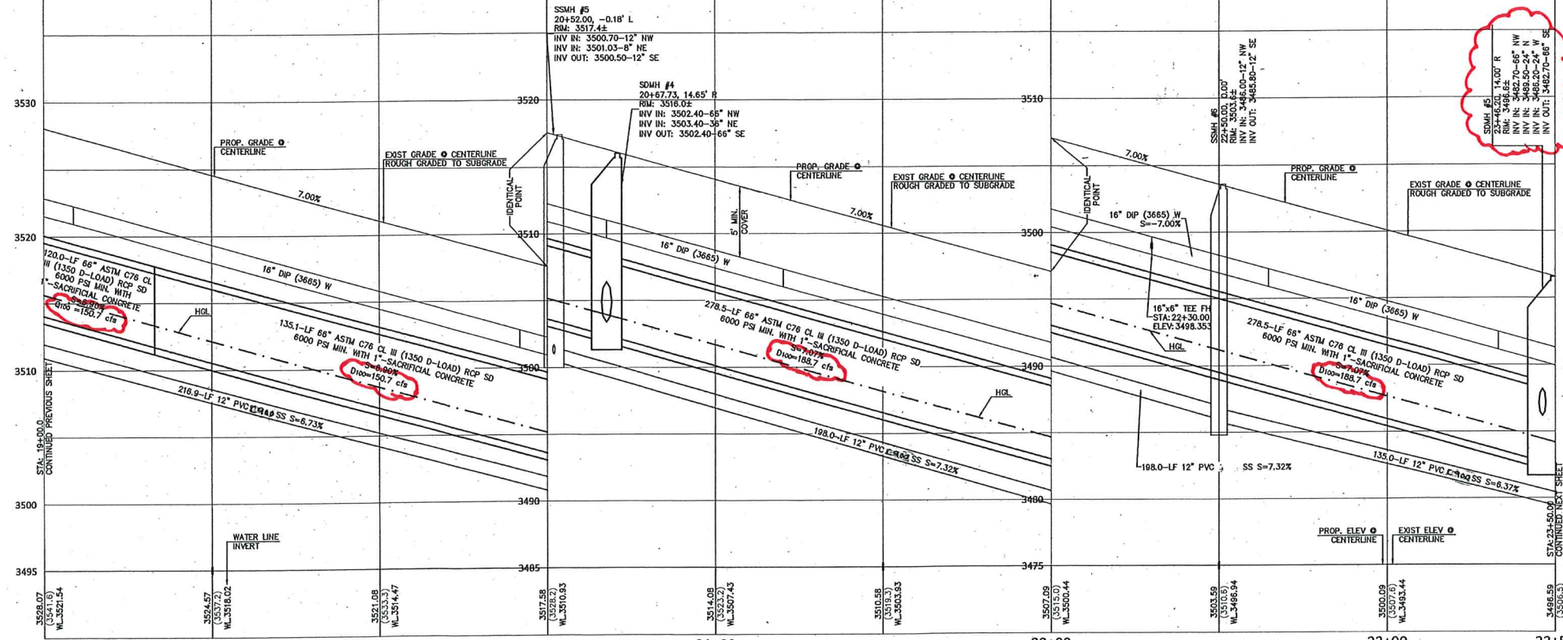


KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'

CROSSBRIDGE DRIVE
(PUBLIC)
SCALE: H:1"= 20'
V:1"= 5'

MINIMUM 24" COVER PER UDACS SEC. 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.



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CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
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SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
~~1~~	~~INSTALL 48" SEWER MANHOLE WITH SINGLE LID~~ NOT USED
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STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
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APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17 PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
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LAS VEGAS, NV 89117
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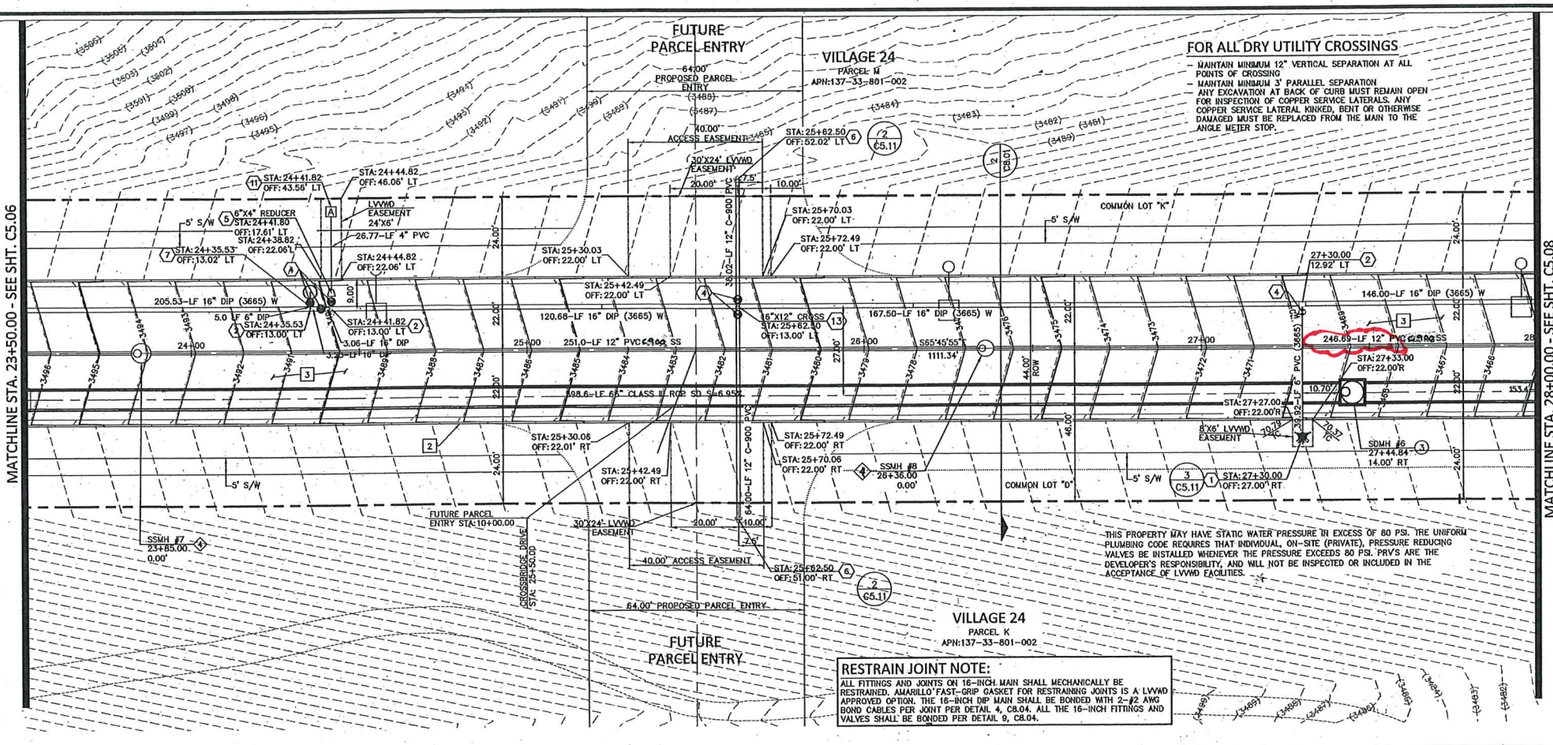
PROFESSIONAL ENGINEER – STATE OF NEVADA – JAMES M. YANCEY – EXP. 06-30-18 – CIVIL – NO. 01 9109 – 7/13/18

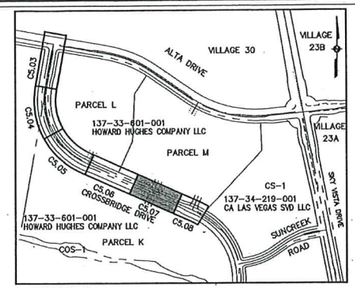
IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 19+00.00 TO 23+50.00
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.06
127V7063
SHEET 11 OF: 26
H05276

PROJ.#:124806 AGR:116009 QS:137-33-NE





KEY MAP

GRAPHIC SCALE
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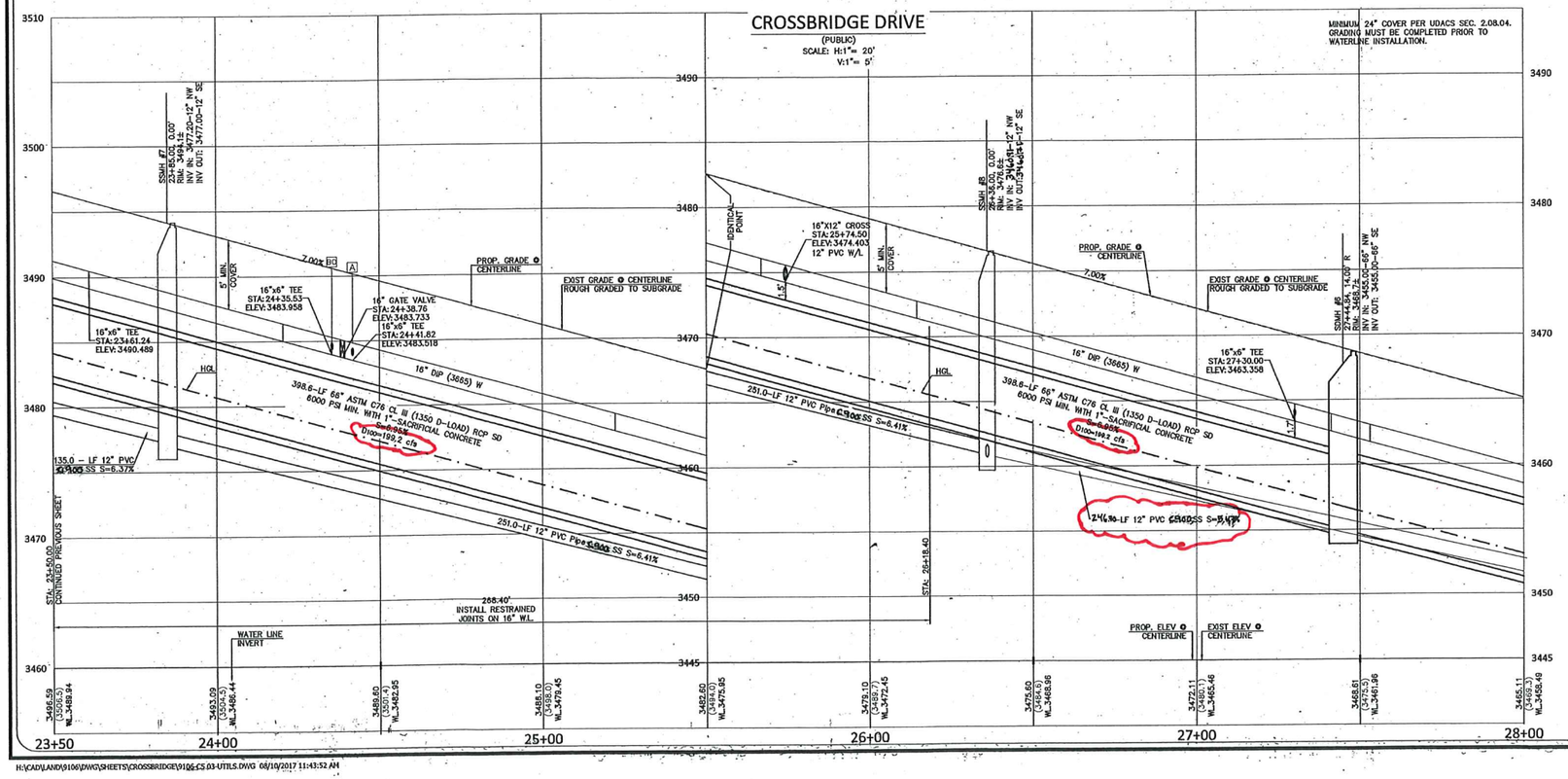
SCALE: 1"=20'



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APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17 PROJECT NO: 124806
LVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

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LAS VEGAS, NV 89117
PHONE: (702) 248-8000
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PROFESSIONAL ENGINEER — JAMES A. YAMDEZ — EXP. 06-30-18 — CIVIL — NO. 016709 — STATE OF NEVADA

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 23+50.00 TO 28+00.00
4" PVC SUMMERLIN VILLAGE 24 CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.07
107V7065
SHEET 12 OF 26
H165270

PROJ#:124806 AGR:116009 QS:137-33-NE

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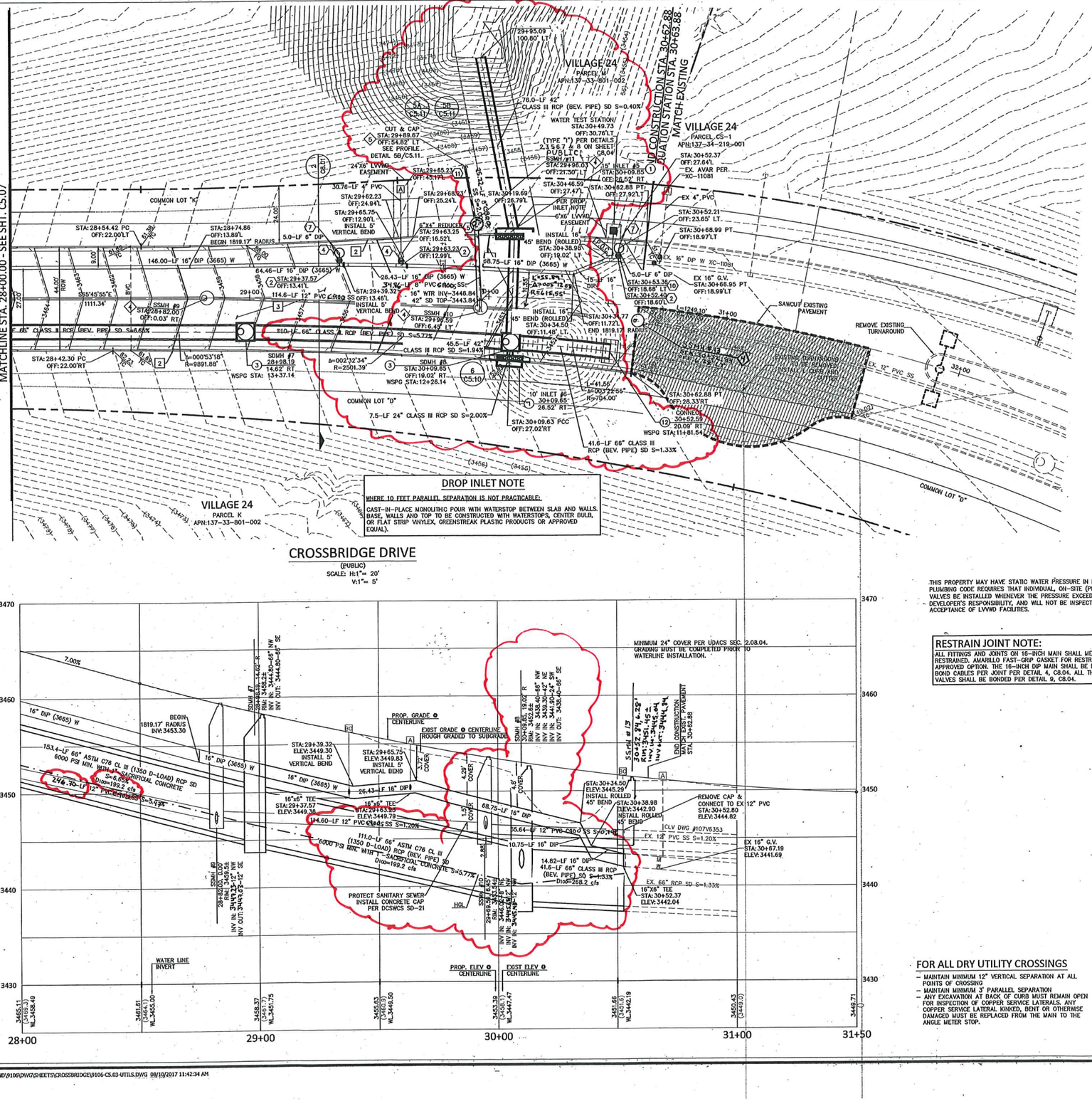

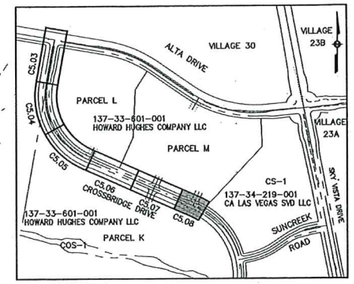

KEY MAP

GRAPHIC SCALE

SCALE: 1"=20'

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW-OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
◇1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
◇2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
◇3	INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
◇4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
◇5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
◇6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
◇7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST-IN-PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE**
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	NOT USED
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"-24")

DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH-ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: 8/31/17 PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

THIS PROPERTY MAY HAVE STATIC WATER PRESSURE IN EXCESS OF 80 PSI. THE UNIFORM PLUMBING CODE REQUIRES THAT INDIVIDUAL, ON-SITE (PRIVATE), PRESSURE REDUCING VALVES BE INSTALLED WHENEVER THE PRESSURE EXCEEDS 80 PSI. PRV'S ARE THE DEVELOPER'S RESPONSIBILITY, AND WILL NOT BE INSPECTED OR INCLUDED IN THE ACCEPTANCE OF LVVWD FACILITIES.

RESTRAIN JOINT NOTE:

ALL FITTINGS AND JOINTS ON 16-INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST-GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16-INCH DIP MAIN SHALL BE BONDED WITH 2-#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16-INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

FOR ALL DRY UTILITY CROSSINGS

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

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA JAMES A. YANCEY No. 01 6109 CIVIL Dt. 6-30-18

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY PLAN & PROFILE

STA. 28+00.00 TO 30+63.00

SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3

CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106

DESIGN BY: J. SALDIVAR

DRAWN BY: J. SALDIVAR

CHECKED BY: K. YAMADA

DATE: 04/2017

SCALE: 1" = 20'

SHEET NUMBER C5.08

107V7063

SHEET 13 OF 26

H65276

PROJ#:124806 AGR:116009 QS:137-33-NE

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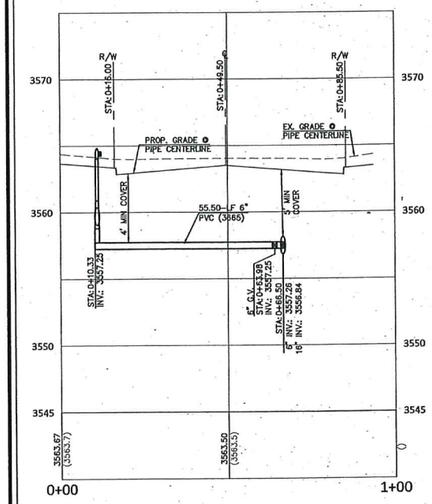
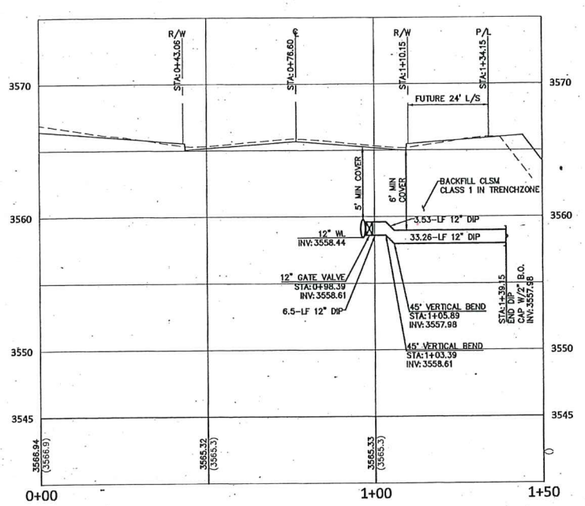


1 C5.09 F.H. LATERAL - STA: 7+30.00 (REF. SHEET C5.03)

PROFILE VIEW H: 1"=20' V: 1"=5'



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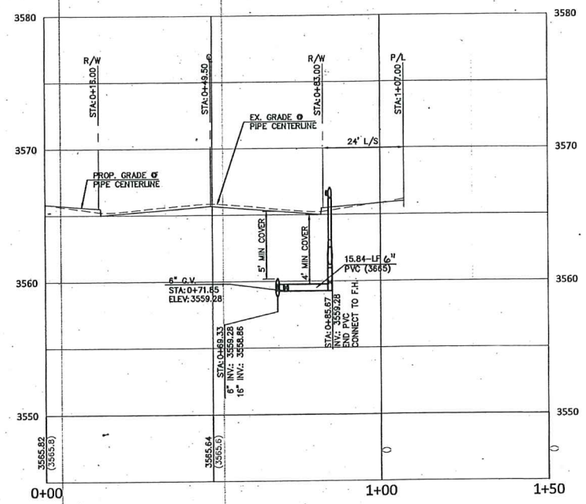
PROFILE VIEW H: 1"=20' V: 1"=5'



3 C5.09 F.H. LATERAL - STA: 12+06.31 (REF. SHEET C5.04)

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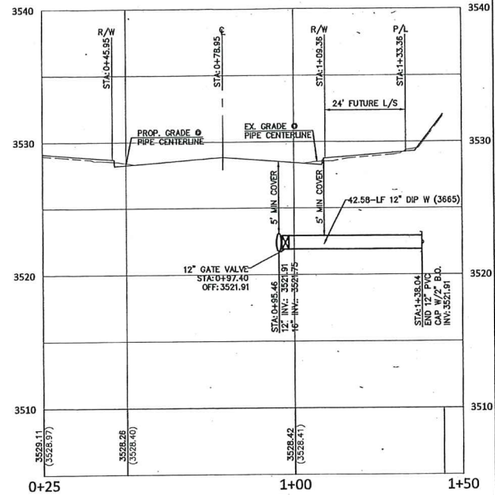
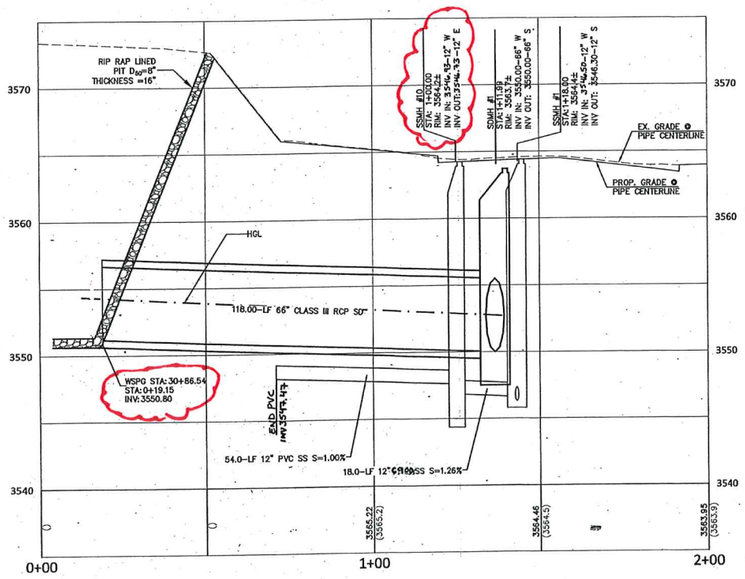


7 C5.09 12" WATER LATERAL - STA: 18+96.38 (REF. SHEET C5.05)

PROFILE VIEW H: 1"=20' V: 1"=5'



4 C5.09 SSMH #1 - STA: 12+75.00 (REF. SHEET C5.04)

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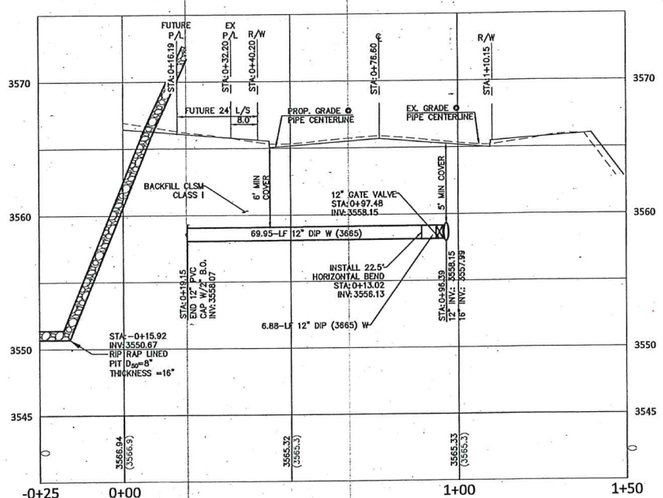
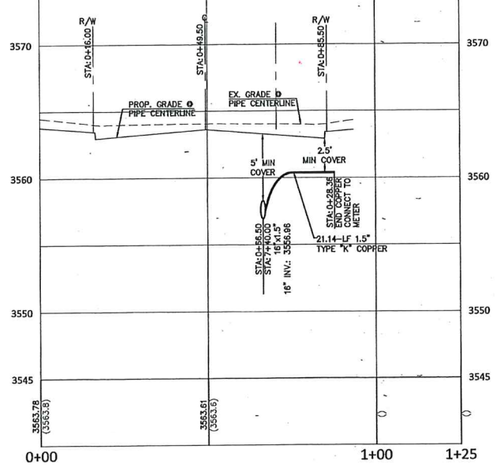


5 C5.09 12" WATER LATERAL - STA: 12+58.00 (REF. SHEET C5.04)

PROFILE VIEW H: 1"=20' V: 1"=5'



6 C5.09 TYPE "K" COPPER - STA: 7+40.00 (REF. SHEET C5.03)

PROFILE VIEW H: 1"=20' V: 1"=5'

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: 8/31/17 PROJECT NO: 124805

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

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www.collinsengr.com

PROFESSIONAL ENGINEER | STATE OF NEVADA | JAMES A. YANEZY | EXP. 06-30-19 | CIVIL | NO. 01 61 09 | LICENSED

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY LATERALS 1

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106

DESIGN BY: J. SALDIVAR

DRAWN BY: J. SALDIVAR

CHECKED BY: K. YAMADA

DATE: 04/2017

SCALE:

SHEET NUMBER C5.09 (107 of 963) SHEET 14 OF 26

H05276

PRO.#:124806 AGR:116009 QS:137-33-NE

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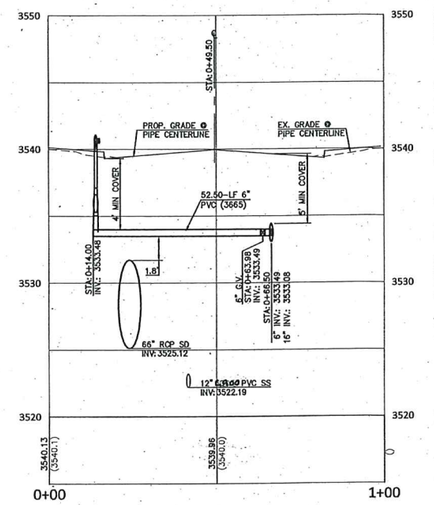

1 C5.10 — F.H. LATERAL - STA: 17+30.00 (REF. SHEET C5.05)

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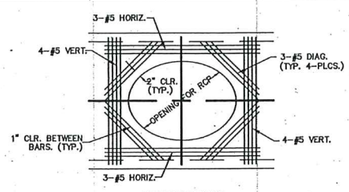
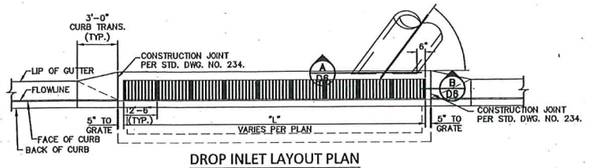
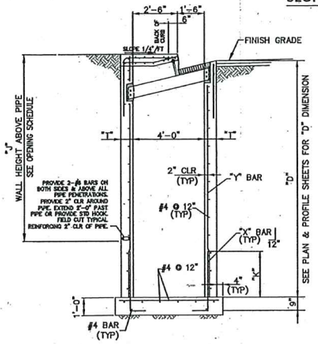
V: 1"=5'



SECTION "A"

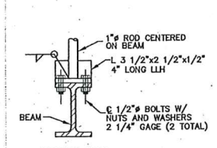


DROP INLET LAYOUT PLAN

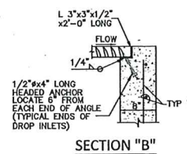


DIMENSIONS "D"	"T"	"K"	"X" BARS	"Y" BARS
D ≤ 7'-0"	8"	2'-0"	#4 @ 12"	#4 @ 12"
7'-0" < D ≤ 9'-0"	8"	2'-6"	#5 @ 12"	#5 @ 12"
9'-0" < D ≤ 10'-6"	8"	2'-6"	#5 @ 6"	#5 @ 8"
10'-6" < D ≤ 13'-3"	10"	2'-6"	#5 @ 4"	#5 @ 4"
13'-3" < D ≤ 14'-6"	12"	3'-0"	#6 @ 4"	#6 @ 4"

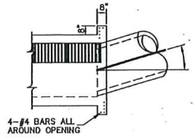
TYPICAL CATCH BASIN SECTION
NOT TO SCALE



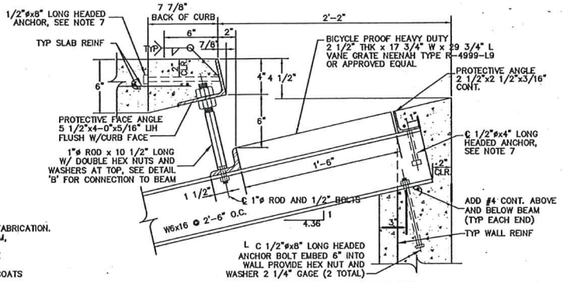
DETAIL "B"



SECTION "B"



ALTERNATE CONNECTION DETAIL

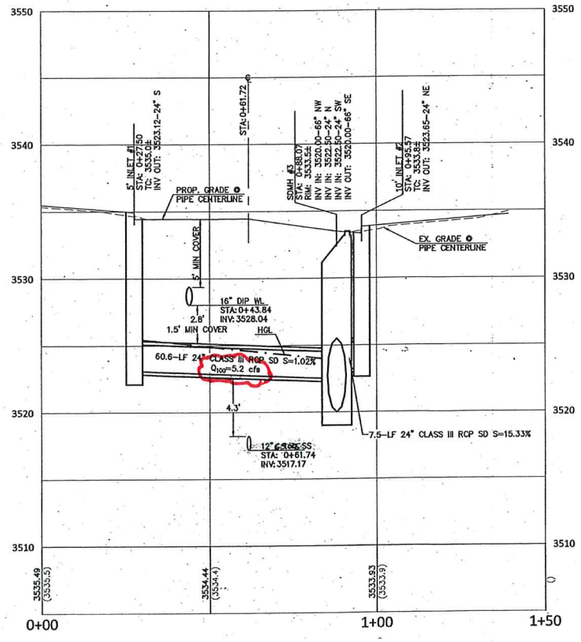


PROTECTIVE FACE & ROD - DETAIL "A"

NOTES:

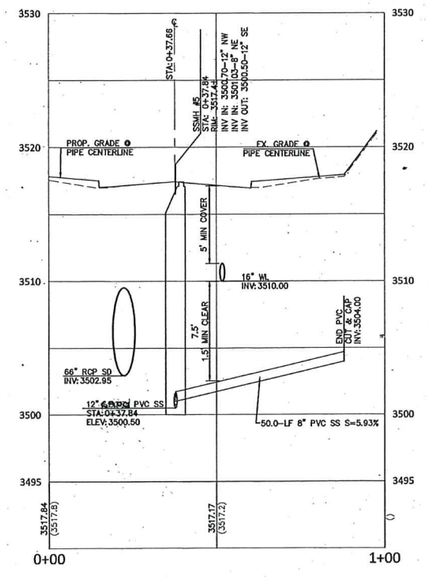
1. ALL EXPOSED METALS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
2. PROVIDE 1/2" (MIN.) CLEARANCE ALL AROUND THE STEEL BEAM, DRY PACK AFTER INSTALLATION.
3. WHEN REQUIRED BY LENGTH OF OPENING, PLATE ANGLE MAYBE DELIVERED IN SECTIONS AND BUTT WELDED IN PLACE.
4. ALL GALVANIZING DAMAGED BY WELDING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

6 C5.10 — DROP INLET DETAIL
NTS



2 C5.10 — SDMH #3 - STA: 18+15.20 (REF. SHEET C5.05)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



3 C5.10 — SSMH #5 - STA:20+52.00 (REF. SHEET C5.06)

PROFILE VIEW
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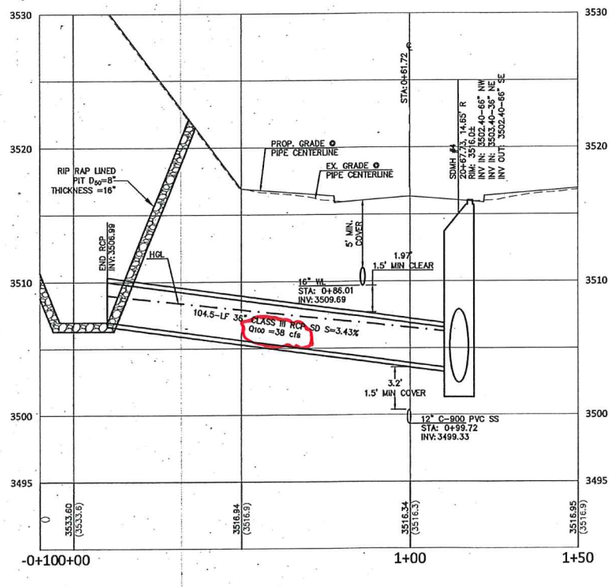
V: 1"=5'



4 C5.10 — SDMH #4 - STA:20+67.73 (REF. SHEET C5.06)

PROFILE VIEW
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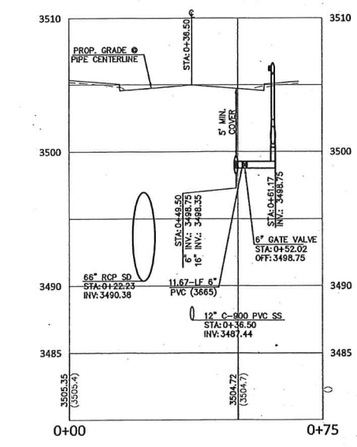
V: 1"=5'



5 C5.10 — F.H. LATERAL - STA:22+30.00 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'

DROP INLET NOTE
WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (MNYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17 PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

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PROFESSIONAL ENGINEER STATE OF NEVADA JAMES A. YANCEY EXP. 06-30-18 CIVIL NO. 016109

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY LATERALS 2

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DESCRIPTION	DATE	DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C5.10
107V7053
SHEET 15 OF 26

H052776

PROJ#:124806 AGR:116009 QS:137-33-NE

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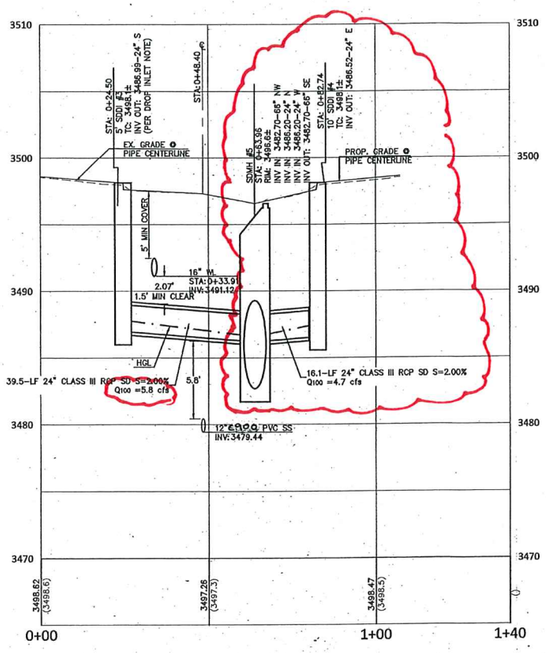

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PROFILE VIEW
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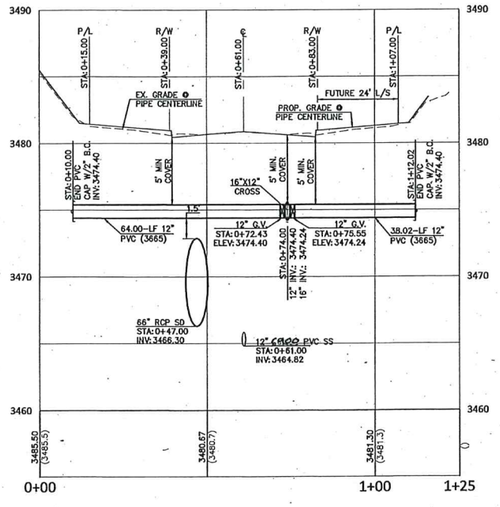
V: 1"=5'



2 C5.11 — 12" WATER LATERAL - STA: 25+62.50 (REF. SHEET C5.07)

PROFILE VIEW
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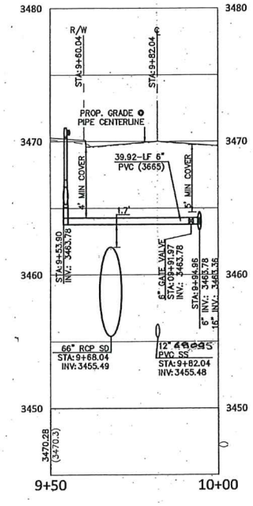

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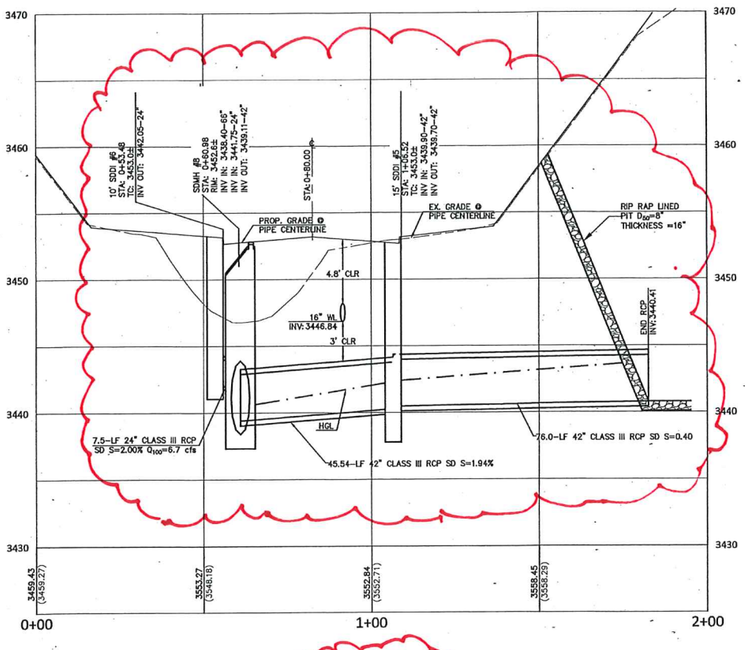
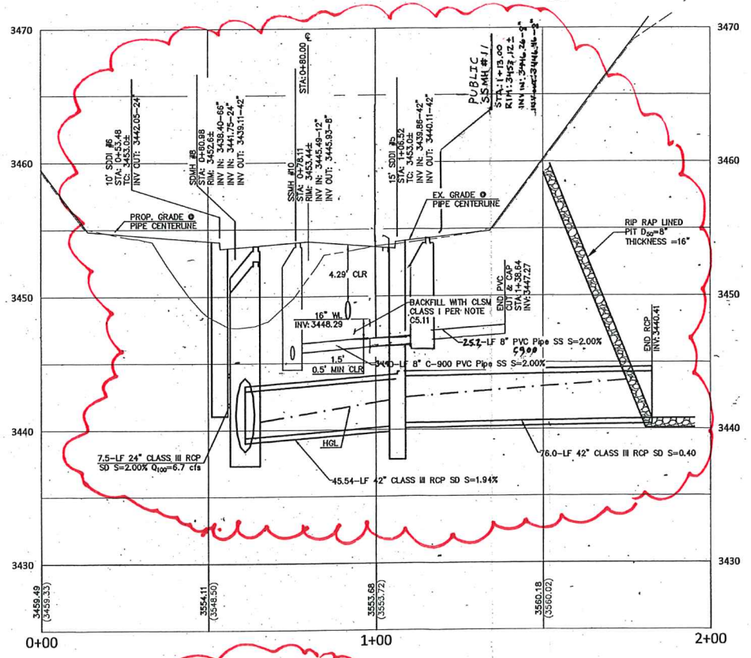
V: 1"=5'



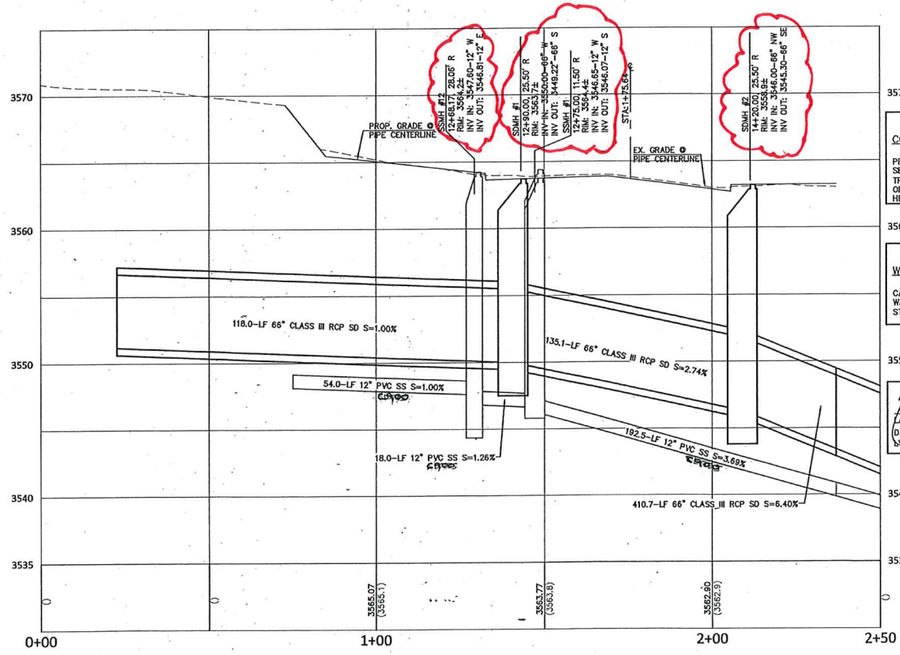
5A C5.11 — SDMH 8 - STA: 29+96.59 WITHOUT SS (REF. SHEET C5.08)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



5B C5.11 — SSMH #10 - STA: 29+96.59 (REF. SHEET C5.08)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



6 C5.11 — SDMH 1 - STA: 12+49.17 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'

CONTROLLED LOW STRENGTH MATERIAL (CLSM)

PROTECT WATERLINES IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I CONTROLLED LOW STRENGTH MATERIAL (CLSM) TO THE SPRINGLINE OF THE WATERLINE. THIS REQUIREMENT IS FOR STRUCTURAL SUPPORT ONLY. ADDITIONAL HEALTH REGULATIONS MAY APPLY PER UDACS 2.22

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: 8/31/17 PROJECT NO: 124806

1,000 APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER – STATE OF NEVADA
JAMES A. VANCITY
EXP. 06-30-18
CIVIL
NO. 01 61 09

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY LATERALS 2

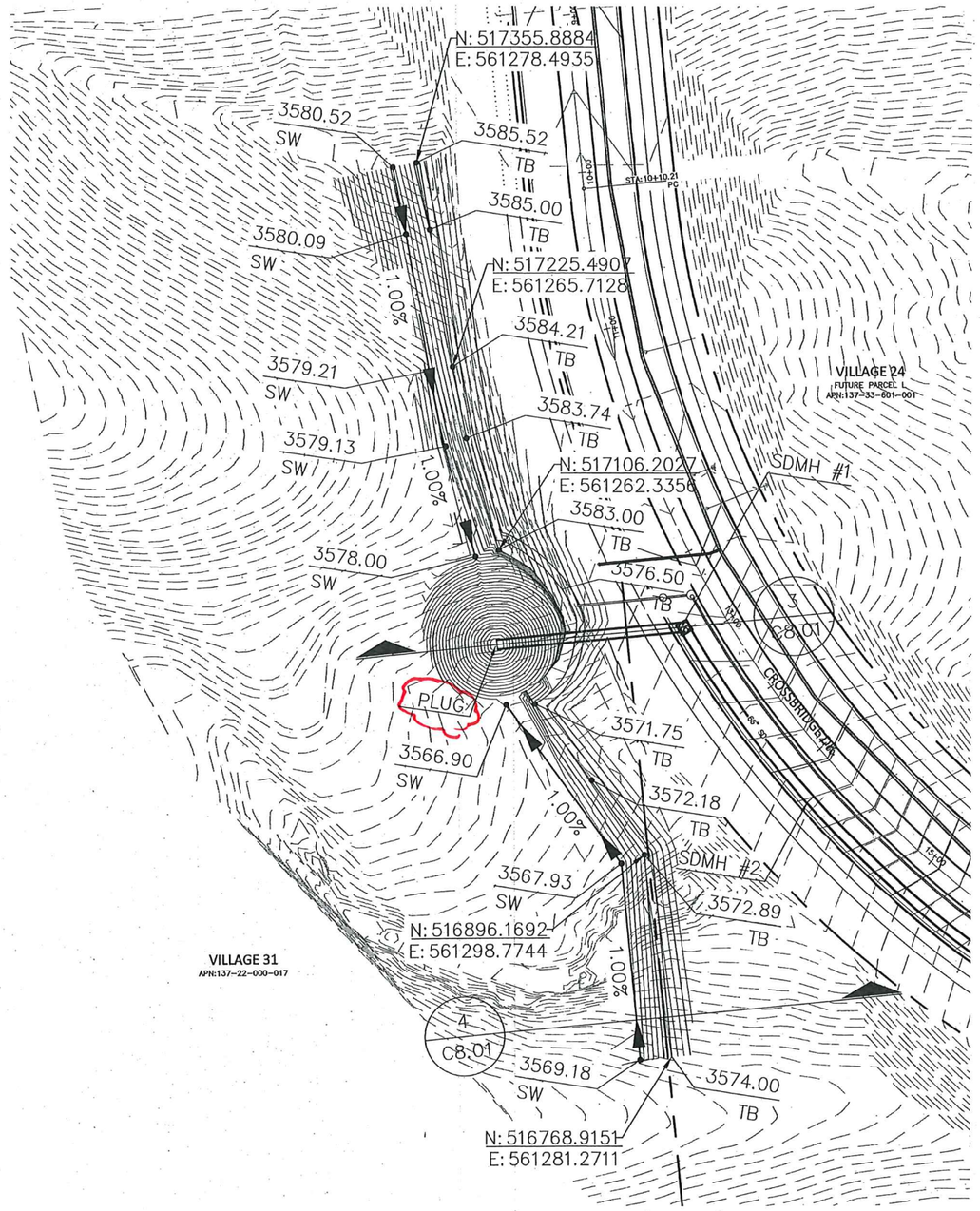
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

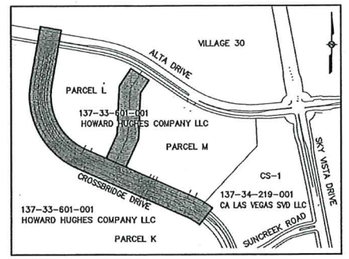
NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:
SHEET NUMBER
C5.11
107V7063
SHEET 16 OF 26
H-65276

PROJ#:124806 AGR:116009 QS:137-33-NE

H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-C5.09-SDLATS.DWG 08/09/2017 04:48:31 PM





KEY MAP
NTS

GRAPHIC SCALE
40 0 20 40
SCALE: 1"=40'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #0368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811 or
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511
CLARK COUNTY TRAFFIC SYSTEMS
CALL 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED		EXISTING	PROPOSED	
(0.00%)	0.00%	SLOPE			AC PAVEMENT
(0.00) XX	0.00 XX	ELEVATION TAG			6" TYPE "A" CURB
		STORM MANHOLE			24" TYPE "L" CURB & GUTTER
		DROP INLET			30" ROLL CURB
--00--	--00--	CONTOUR			
		RETAINING WALL			
		SCREEN WALL			

	PL-RIGHT-OF-WAY
	PL-ADJACENT
	CENTERLINE
	EASEMENT LINE
	FLOW LINE
	SAWCUT LINE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

107V2D3

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
JAMES A. YANCEY
EXP. 06.30.18
CIVIL
NO. 016109
8/23/17

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
ROUGH GRADING PLAN 2
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=40
SHEET NUMBER C5.13
SHEET 18 OF 26

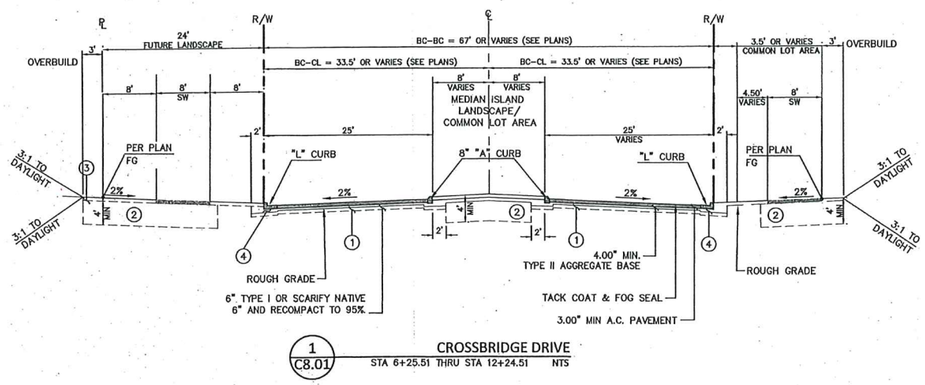
H to 524.6

PROJ#:124806 AGR:116009 QS:137-33-NE

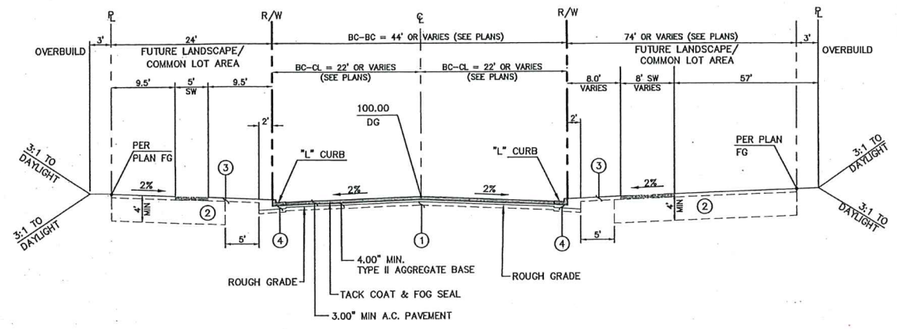
H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-C4.01-HGRD.DWG 08/09/2017 03:51:20 PM

NOTES:

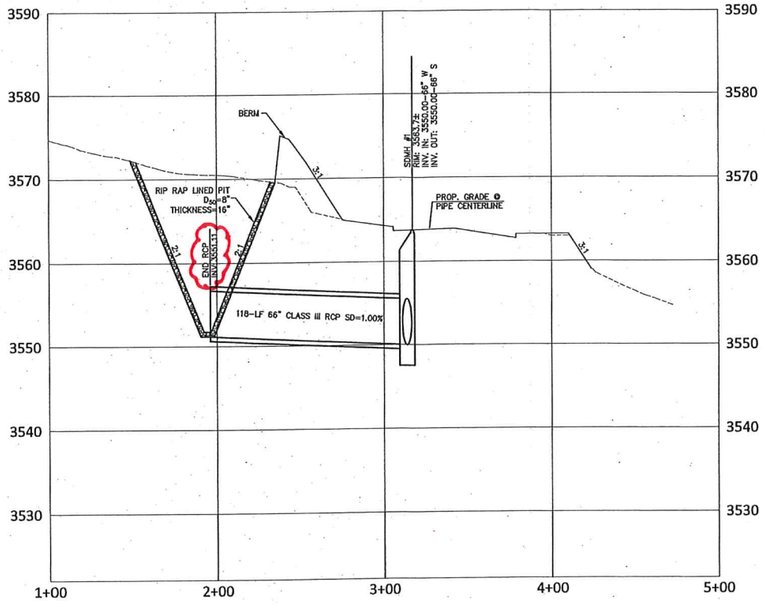
1. TYPE 1 OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%
2. LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% RIP ENTIRE AREA TO DEPTH INDICATED.
3. ROUGH GRADE (R.G.) TO BE 6" BELOW FINISHED GRADE (F.G.) FOR FUTURE LANDSCAPE PURPOSES.
4. 6" MIN TYPE II AGGREGATE BASE UNDER CURB AND GUTTER,TYPICAL



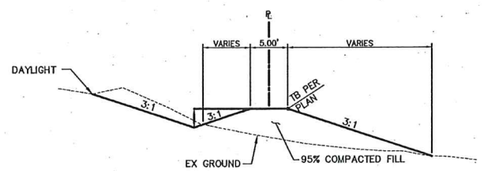
1 C8.01 CROSSBRIDGE DRIVE
STA 6+25.51 THRU STA 12+24.51 NTS



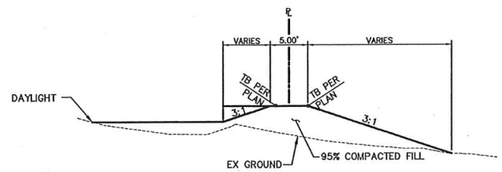
2 C8.01 CROSSBRIDGE DRIVE
STA 13+79.24 THRU STA 30+60.00 NTS



3 C8.01 66" STORM DRAIN LINE
@ STA: 13+01.69 H: 1"=20'
V: 1"=5'



4 C8.01 TEMPORARY DIVERSION BERM
NTS



5 C8.01 TEMPORARY DIVERSION BERM
NTS

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO: 124806 DATE: 8/31/17
107V7063

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES A. YANCEY
DR 16-5-18
CIVIL
NO. 016109

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

DETAILS SHEET 1

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

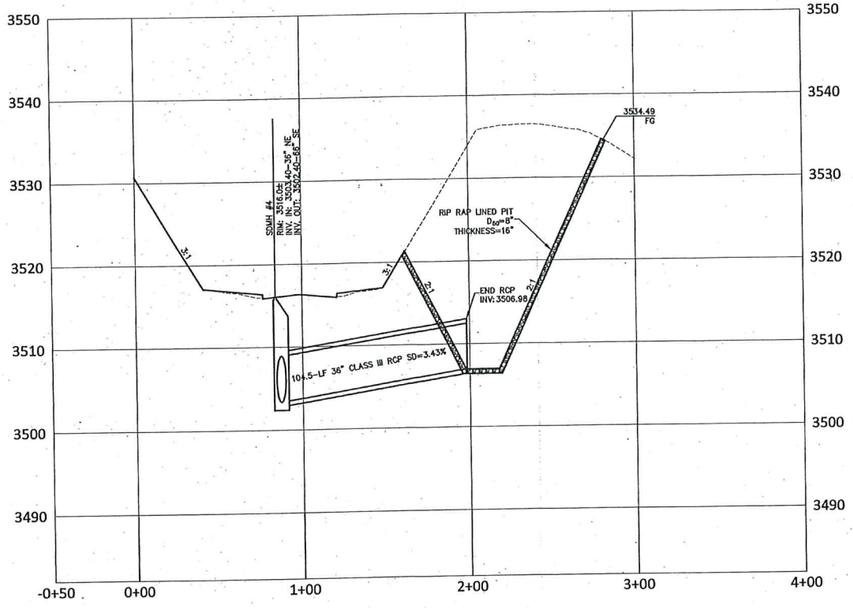
CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C8.01
SHEET 23 OF 26

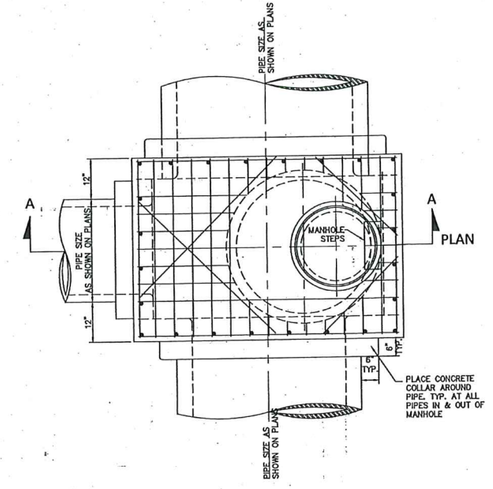
H:\5476

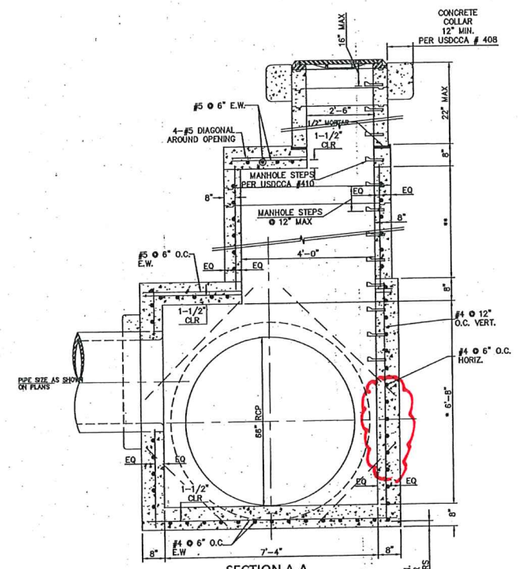
PROJ#:124806 AGR:116009 QS:137-33-NE

H:\CAD\LAND\9106\DWG\SHEETS\CROSSBRIDGE\9106-C8.01-DTL.DWG 07/31/2017 04:26:45 PM



6 / C8.02 — **36" STORM DRAIN LINE**
STA: 20+67.73 — H: 1"=20' V: 1"=5'





SECTION A-A

SDMH	*	**
1	6'-8"	4'-0"
2	6'-8"	3'-0"
3	6'-8"	4'-0"
4	6'-8"	4'-0"
5	10'-0"	1'-0"
6	6'-8"	4'-0"
7	6'-8"	4'-0"
8	6'-8"	5'-0"

7 / C8.02 — **MANHOLE DETAIL**
NTS

107V7063

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
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PROFESSIONAL ENGINEER — STATE OF NEVADA — JAMES A. YANCEY — EXP. 06.30.18 — CIVIL — NO. 016109 — 4/28/17

IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

DETAILS SHEET 2
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C8.02
SHEET 24 OF 26

H695216

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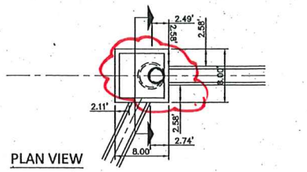
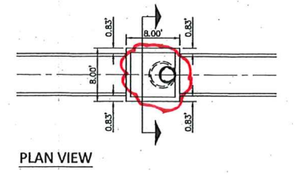


PLAN VIEW

PROFILE VIEW

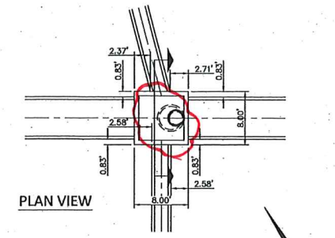
A C8.03 SDMH #1 NTS



PLAN VIEW

PROFILE VIEW

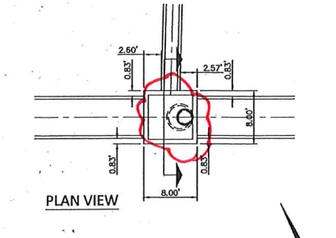
B C8.03 SDMH #2 NTS



PLAN VIEW

PROFILE VIEW

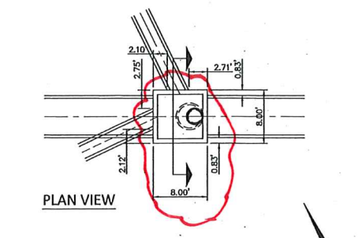
C C8.03 SDMH #3 NTS



PLAN VIEW

PROFILE VIEW

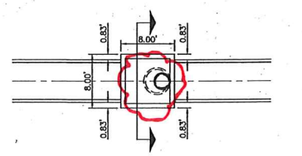
D C8.03 SDMH #4 NTS



PLAN VIEW

PROFILE VIEW

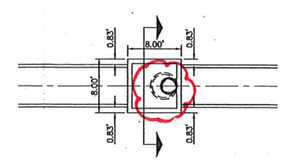
E C8.03 SDMH #5 NTS



PLAN VIEW

PROFILE VIEW

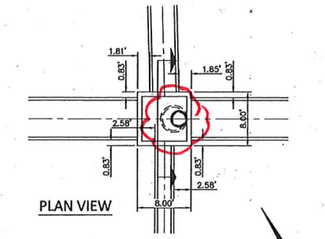
F C8.03 SDMH #6 NTS



PLAN VIEW

PROFILE VIEW

G C8.03 SDMH #7 NTS



PLAN VIEW

PROFILE VIEW

H C8.03 SDMH #8 NTS

107V7063

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV. 89117
PHONE: (702) 248-8070
FAX: (702) 248-8072
www.collinsengr.com

PROFESSIONAL ENGINEER STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-18
CIVIL
NO. 017603

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

DETAILS SHEET 3

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C8.03
SHEET 25 OF 26

H-165076

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SUMMERLIN

SM

VILLAGE 24

CROSSBRIDGE DRIVE UNIT 3

STREET IMPROVEMENT PLANS

FROM ALTA DRIVE TO CROSSBRIDGE UNIT 2

SID #812 PROJECTS 10A & B

2015

A.P.N. 137-33-601-001

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11906
1/2/18
FOR Δ ONLY

REV#	REV. DESCRIPTION	SHEET(S)	APPD BY	DATE
Δ	REVISED SD & SS NOTES	4-6, 9-19		
		16, 18, 23, 25		

SHEET INDEX

1.	C1.01	COVER AND APPROVAL SHEET
2.	C1.02	GENERAL NOTES SHEET
3.	C3.01	HORIZONTAL CONTROL PLAN
4.	C4.01	MASTER GRADING PLAN
5.	C5.00	SEWER MASTER PLAN
6.	C5.01	STORM DRAIN MASTER PLAN
7.	C5.02	WATER MASTER PLAN
8.	C5.03	UTILITY PLAN AND PROFILE – STA: 5+87.51 TO 10+00.00
9.	C5.04	UTILITY PLAN AND PROFILE – STA: 10+00.00 TO 14+50.00
10.	C5.05	UTILITY PLAN AND PROFILE – STA: 14+50.00 TO 19+00.00
11.	C5.06	UTILITY PLAN AND PROFILE – STA: 19+00.00 TO 23+50.00
12.	C5.07	UTILITY PLAN AND PROFILE – STA: 23+50.00 TO 28+00.00
13.	C5.08	UTILITY PLAN AND PROFILE – STA: 28+00.00 TO 30+63.00
14.	C5.09	UTILITY LATERALS 1
15.	C5.10	UTILITY LATERALS 2
16.	C5.11	UTILITY LATERALS 3
17.	C5.12	ROUGH GRADING PLAN 1
18.	C5.13	ROUGH GRADING PLAN 2
19.	C6.01	SIGNAGE AND STRIPING PLAN 1
20.	C6.02	SIGNAGE AND STRIPING PLAN 2
21.	C6.03	STREET LIGHTING PLAN 1
22.	C6.04	STREET LIGHTING PLAN 2
23.	C8.01	DETAILS SHEET 1
24.	C8.02	DETAILS SHEET 2
25.	C8.03	DETAILS SHEET 3
26.	C8.04	DETAILS SHEET 4

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

APPROVALS

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENT CONSTRUCTED IN THE DEDICATED RIGHT-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FORM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIFICALLY LISTED UNDER "DEVIATIONS FROM STANDARD." THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN "DEVIATIONS FROM STANDARDS" IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA 1992.

ALLEN PAVELKA, PE #9029
CITY ENGINEER — 10-4-17 DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17 PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL
(SHEETS: C1.01, C1.02 and C4.01, C5.02–C5.11, C5.13, C6.03, C6.04, C8.01, C8.04)

LAS VEGAS FIRE & RESCUE — 8/29/17 DATE

N/A
CITY OF LAS VEGAS PLANNING DEPARTMENT — DATE
THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

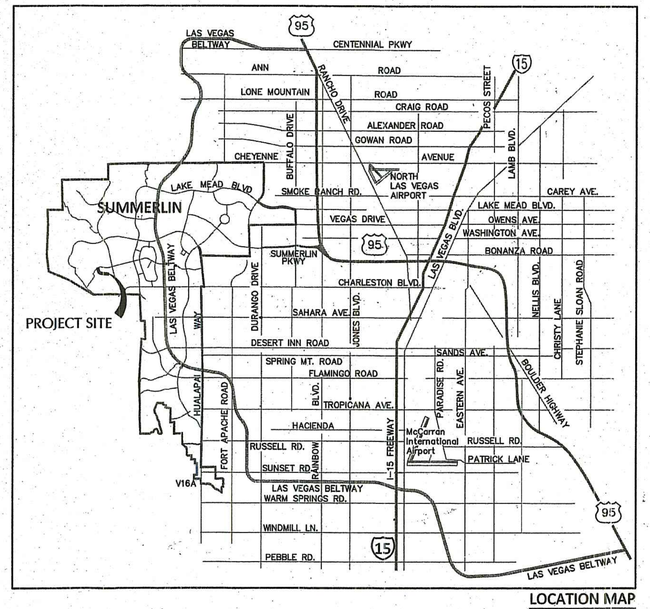
THE HOWARD HUGHES COMPANY, LLC
N/A
KEVIN ORROCK — DATE
TITLE: VICE PRESIDENT

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.
Barbara Jamison — 8.24.17
NV ENERGY — DATE

"THE AFFIXED CENTURYLINK CORPORATION 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."
8/24/17
CENTRAL TELEPHONE CO. D/B/A CENTURY LINK — DATE

9/12/17
COX COMMUNICATIONS LAS VEGAS, INC. — DATE

9.14.17
SOUTHWEST GAS CORPORATION — DATE
1074 7063



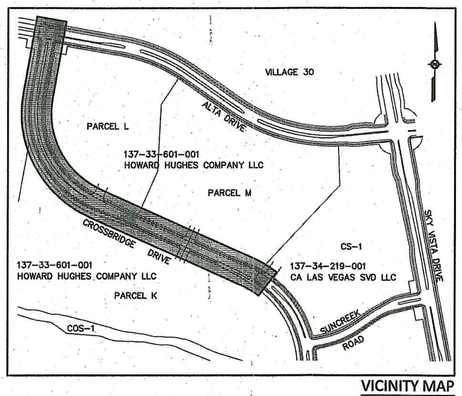
LOCATION MAP
NTS

LEGAL DESCRIPTION

THAT PORTION OF PARCEL 2 AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE LYING WITHIN SECTIONS 33 AND 34, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AND SECTIONS 3 AND 4, TOWNSHIP 21 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA.

OWNER/DEVELOPER

HOWARD HUGHES COMPANY, LLC
10801 CHARLESTON BLVD., 3RD FLOOR
LAS VEGAS, NEVADA 89146
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450



VICINITY MAP
NTS

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsenger.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-18
CIVIL
NO. 016109
9/29/17

IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

COVER SHEET
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: N/A
SHEET NUMBER: C1.01
SHEET 1 OF 26

PROJ.#:124806 AGR:116099 QS:137-33-ME

1165276

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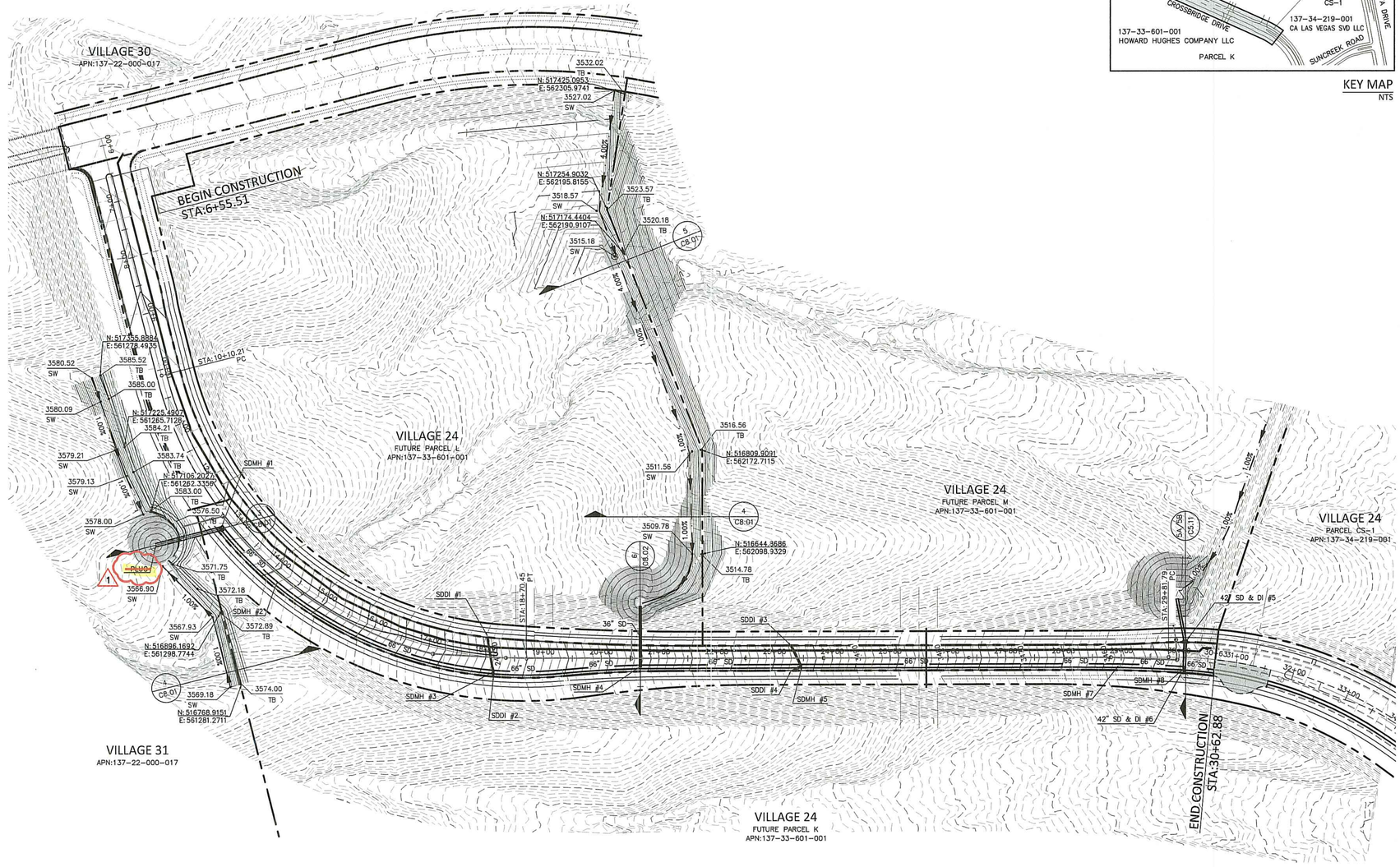

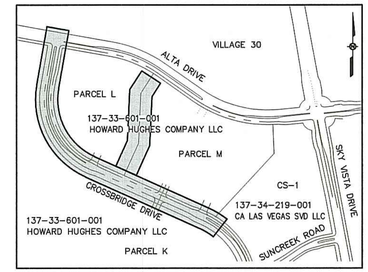

KEY MAP
NTS

GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #0368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS R DYSON
EXP 12/31/19
CIVIL
No. 11306
1/4/18
FOR ⚠1 ONLY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE. _____ PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511
CLARK COUNTY TRAFFIC MANAGEMENT
CALL 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED	
(0.00%)	0.00%	SLOPE
(0.00) XX	0.00 XX	ELEVATION TAG
Ⓓ	Ⓓ	STORM MANHOLE
		DROP INLET
--00--	--00--	CONTOUR
		RETAINING WALL
		SCREEN WALL

EXISTING	PROPOSED	
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SAWCUT LINE

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC APN: 137-33-601-001

MASTER GRADING PLAN

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION	DESIGN BY
⚠1	12/27/17	REMOVE SD PLUG	

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=100

SHEET NUMBER
C4.01
SHEET 4 OF 26

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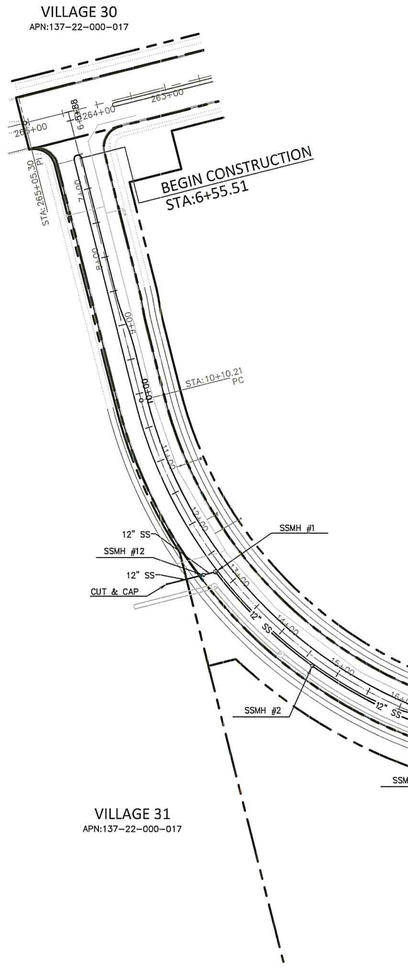
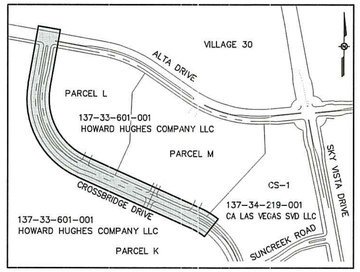
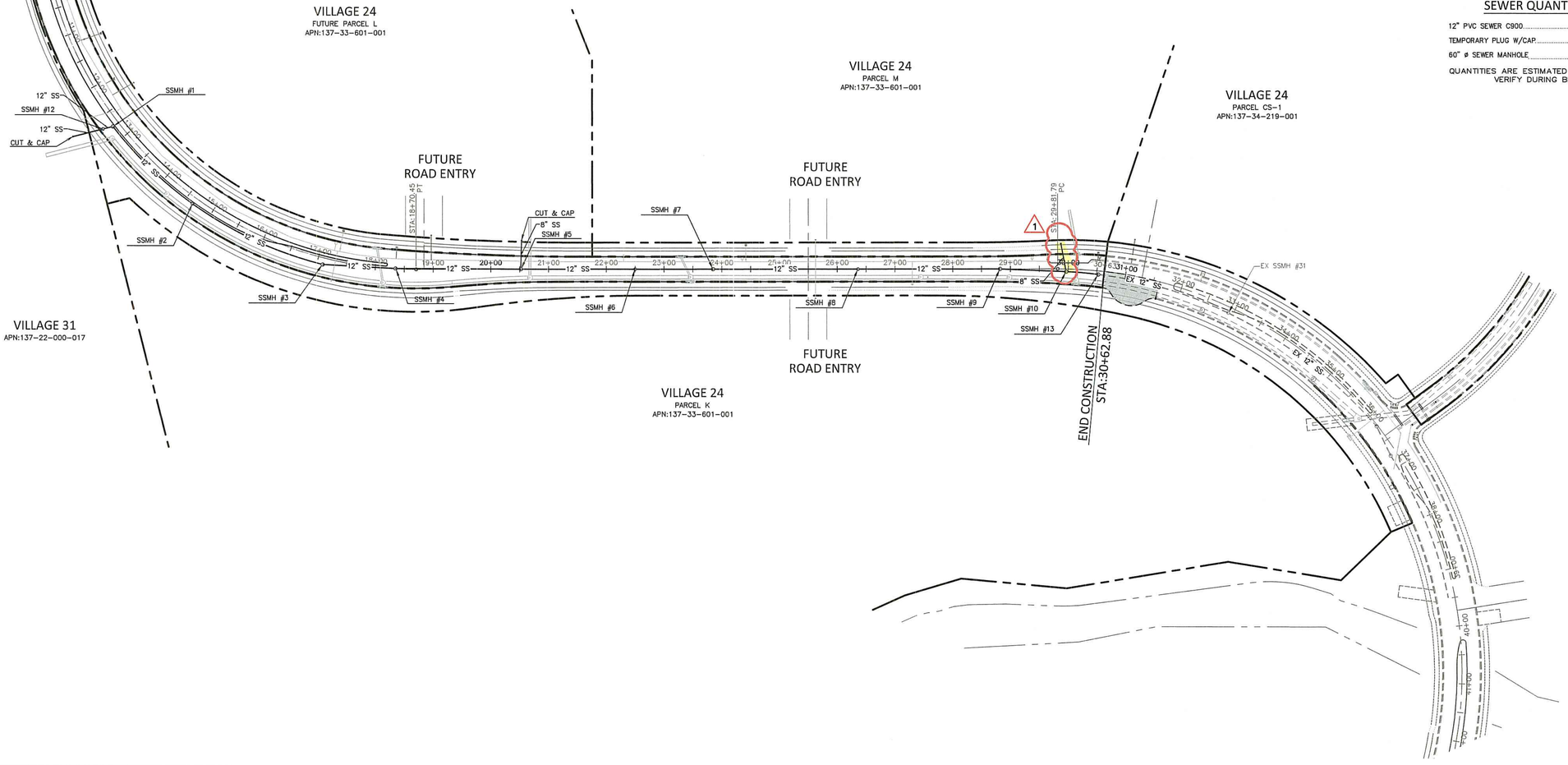




KEY MAP
NTS

SANITARY SEWER MANHOLE TABLE

SDMH#	STREET NAME	STATION & OFFSET	MH SIZE	PIPES IN:	PIPES OUT	RIM
1	CROSSBRIDGE DRIVE	12+75.00 11.50 R	5.00	12" PVC INV IN=3546.50	12" PVC INV OUT=3546.30	3564.40
2	CROSSBRIDGE DRIVE	14+64.14 11.50 R	5.00	12" PVC INV IN=3539.20	12" PVC INV OUT=3539.00	3557.08
3	CROSSBRIDGE DRIVE	17+10.00 11.50 R	5.00	12" PVC INV IN=3523.70	12" PVC INV OUT=3523.50	3541.13
4	CROSSBRIDGE DRIVE	18+35.01 -0.46 L	5.00	12" PVC INV IN=3515.50	12" PVC INV OUT=3515.30	3532.61
5	CROSSBRIDGE DRIVE	20+52.00 -0.18 L	5.00	12" PVC INV IN=3500.70 8" PVC INV IN=3501.03	12" PVC INV OUT=3500.50	3517.44
6	CROSSBRIDGE DRIVE	22+50.00 0.00	5.00	12" PVC INV IN=3486.00	12" PVC INV OUT=3485.80	3503.59
7	CROSSBRIDGE DRIVE	23+85.00 0.00	5.00	12" PVC INV IN=3477.20	12" PVC INV OUT=3477.00	3494.14
8	CROSSBRIDGE DRIVE	26+36.00 0.00	5.00	12" PVC INV IN=3460.90	12" PVC INV OUT=3460.70	3476.58
9	CROSSBRIDGE DRIVE	28+82.00 0.00	5.00	12" PVC INV IN=3447.07	12" PVC INV OUT=3446.80	3459.48
10	CROSSBRIDGE DRIVE	29+96.56 4.68 R	5.00	12" PVC INV IN=3445.65	12" PVC INV OUT=3445.45 8" PVC INV IN=3445.45	3453.44
12	CROSSBRIDGE DRIVE	12+68.17 28.06 R	5.00	12" PVC INV IN=3546.93	12" PVC INV OUT=3546.73	3564.24
13	CROSSBRIDGE DRIVE	30+52.84 6.28 R	5.00	12" PVC INV IN=3445.04	12" PVC INV OUT=3444.84	3451.45



GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 88°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

SEWER QUANTITIES (PUBLIC)

12" PVC SEWER C900	1806 LF
TEMPORARY PLUG W/CAP	3 EA
60" ø SEWER MANHOLE	12 EA

QUANTITIES ARE ESTIMATED ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11309
1/4/18
FOR 1 ONLY

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511
CALL 1-702-432-5300

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1-702-227-2929

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LEGEND

EXISTING	PROPOSED	
(0.00) XXX	0.00 XXX	ELEVATION TAG
		DRAIN INLET
		RETAINING WALL
		SCREEN WALL
		UTILITY POLE
		STREET LIGHT
		POWER LINE/POLE
		TELEPHONE LINE
		WATER LINE
		SANITARY SEWER LINE
		STORM SEWER LINE
		GAS LINE
		STORM MANHOLE
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		REDUCER
		SEWER MANHOLE
		CLEANOUT
		GAS VALVE
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SIGN W/POLE
		SAWCUT LINE
		AREA LIGHT
		WATER METER
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
	BWV	BACK WATER VALVE

COLLINS ENGINEERS INC
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
SEWER MASTER PLAN
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION
1	12/27/17	REVISED SS LOCATION

DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=100
SHEET NUMBER C5.00
SHEET 5 OF 26

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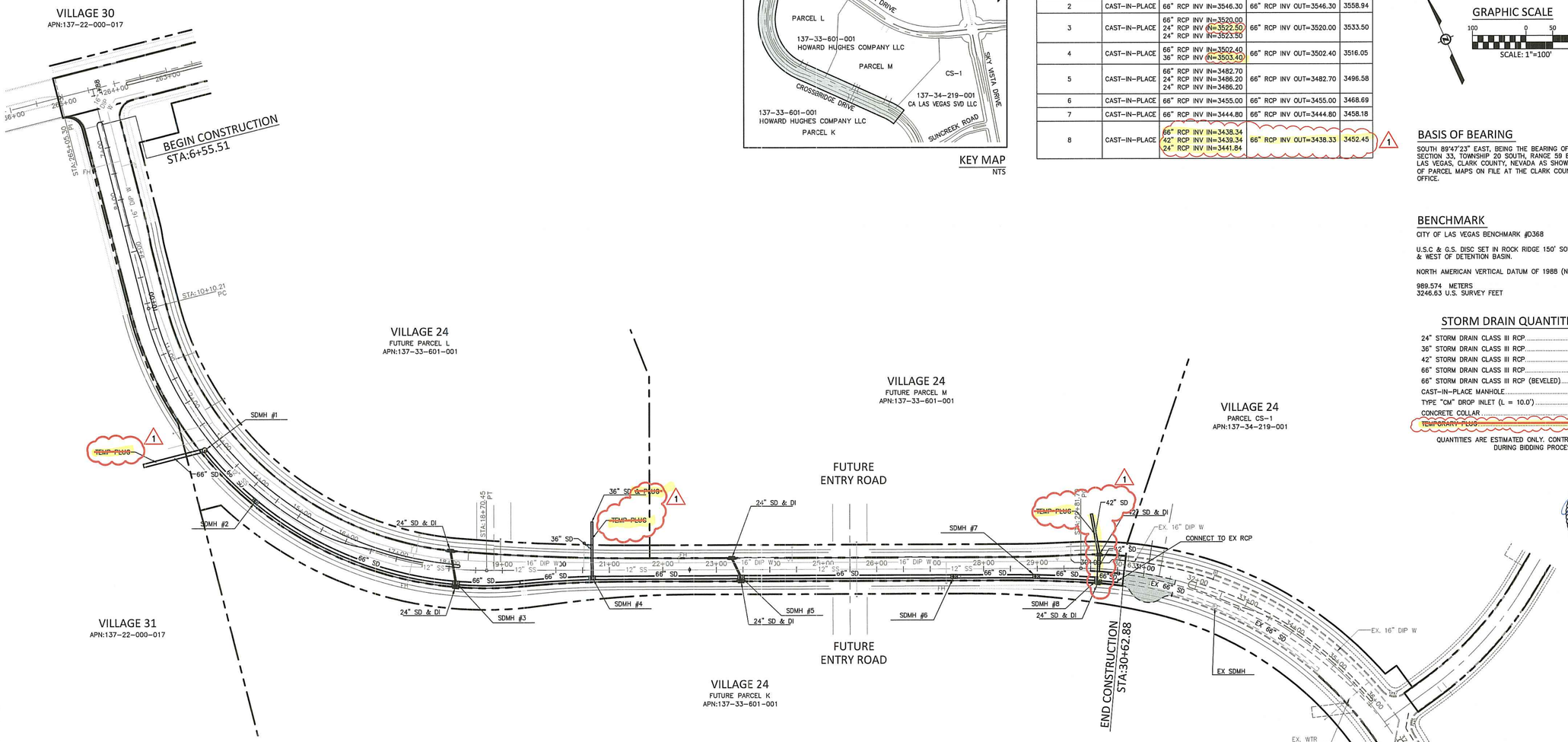

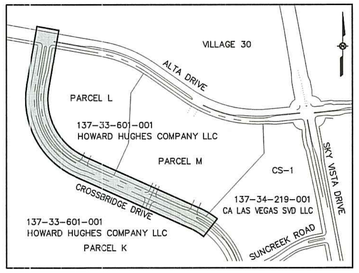

KEY MAP
NTS

STORM DRAIN MANHOLE TABLE

SDMH#	MH TYPE	PIPES IN:	PIPES OUT	RIM
1	CAST-IN-PLACE	66" RCP INV IN=3550.00	66" RCP INV OUT=3550.00	3563.72
2	CAST-IN-PLACE	66" RCP INV IN=3546.30	66" RCP INV OUT=3546.30	3558.94
3	CAST-IN-PLACE	66" RCP INV IN=3520.00 24" RCP INV IN=3522.50 24" RCP INV IN=3523.50	66" RCP INV OUT=3520.00	3533.50
4	CAST-IN-PLACE	66" RCP INV IN=3502.40 36" RCP INV IN=3503.40	66" RCP INV OUT=3502.40	3516.05
5	CAST-IN-PLACE	66" RCP INV IN=3482.70 24" RCP INV IN=3486.20 24" RCP INV IN=3486.20	66" RCP INV OUT=3482.70	3496.58
6	CAST-IN-PLACE	66" RCP INV IN=3455.00	66" RCP INV OUT=3455.00	3468.69
7	CAST-IN-PLACE	66" RCP INV IN=3444.80	66" RCP INV OUT=3444.80	3458.18
8	CAST-IN-PLACE	66" RCP INV IN=3438.34 42" RCP INV IN=3439.34 24" RCP INV IN=3441.84	66" RCP INV OUT=3438.33	3452.45

1

GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

STORM DRAIN QUANTITIES (PUBLIC)

24" STORM DRAIN CLASS III RCP	131	LF
36" STORM DRAIN CLASS III RCP	105	LF
42" STORM DRAIN CLASS III RCP	122	LF
66" STORM DRAIN CLASS III RCP	797	LF
66" STORM DRAIN CLASS III RCP (BEVELED)	1009	LF
CAST-IN-PLACE MANHOLE	8	EA
TYPE "CM" DROP INLET (L = 10.0')	6	EA
CONCRETE COLLAR	1	EA
TEMPORARY PLUG	3	EA

1

QUANTITIES ARE ESTIMATED ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

PROFESSIONAL ENGINEER STATE OF NEVADA
THOMAS P. DYSON
Exp 12/31/18
CIVIL
No. 11306
1/4/18
FOR 1 ONLY

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811 or 1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511 (CLARK COUNTY TRAFFIC SIGNS/SIGNALS AND FREEWAY AND ARTERIAL STREET LIGHT SYSTEMS)
CALL 1-702-432-5300 (FREEWAY AND ARTERIAL STREET LIGHT SYSTEMS)

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LEGEND

EXISTING	PROPOSED		EXISTING	PROPOSED		EXISTING	PROPOSED		EXISTING	PROPOSED	
(0.00) XXX	0.00 XXX	ELEVATION TAG	-E-	-E-	POWER LINE/POLE			FIRE HYDRANT			PL-RIGHT-OF-WAY
		DRAIN INLET	-T-	-T-	TELEPHONE LINE			FIRE DEPARTMENT CONNECTION			PL-ADJACENT
		RETAINING WALL	-W-	-W-	WATER LINE			WATER VALVE			CENTERLINE
		SCREEN WALL	-SS-	-SS-	SANITARY SEWER LINE			REDUCER			EASEMENT LINE
		UTILITY POLE	-D-	-D-	STORM SEWER LINE	S	S	SEWER MANHOLE			FLOW LINE
		STREET LIGHT	-G-	-G-	GAS LINE			CLEANOUT			SIGN W/POLE
				D	STORM MANHOLE			GAS VALVE			SAWCUT LINE
											AREA LIGHT
											WATER METER

EXISTING	PROPOSED	
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
	BWV	BACK WATER VALVE

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COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

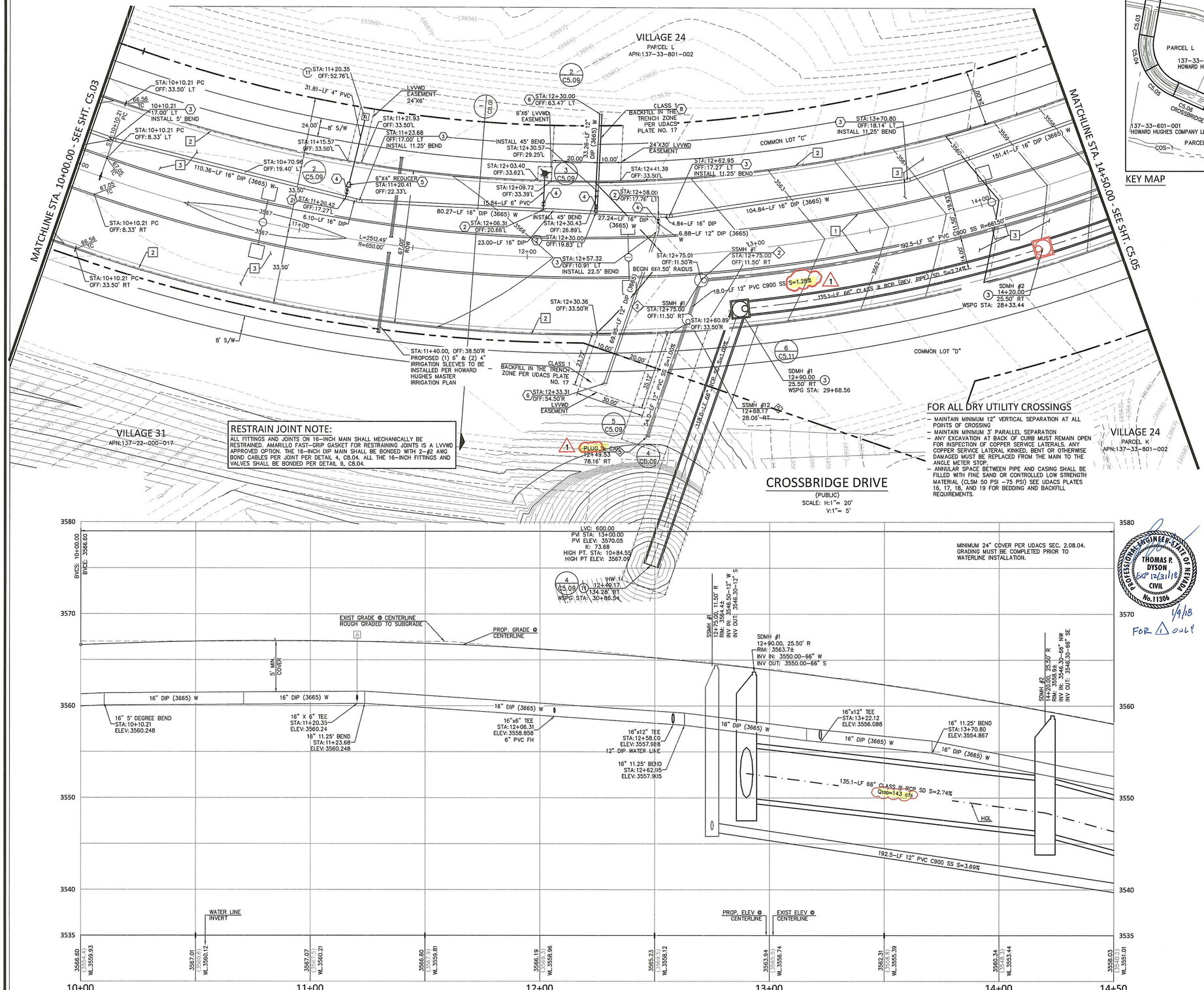
IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

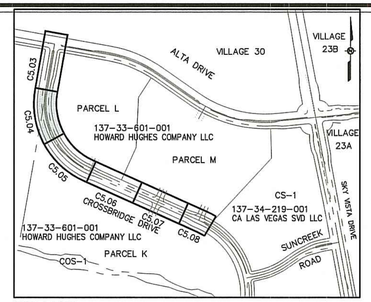
APN: 137-33-601-001

STORM DRAIN MASTER PLAN
SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		REVISED SD LOCATION

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	1"=100
SHEET NUMBER	C5.01
SHEET	6 OF 26





KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW–OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
3	INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST–IN–PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	CULVERT HEADWALL
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE
**	CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"–24")

DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH–ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: _____ PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS, INC.
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY PLAN & PROFILE

STA. 10+00.00 TO 14+50.00

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3

CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		REVISED SS INFO

CEI PROJECT: 9106

DESIGN BY: J. SALDIVAR

DRAWN BY: J. SALDIVAR

CHECKED BY: K. YAMADA

DATE: 04/2017

SCALE: 1" = 20'

SHEET NUMBER

C5.04

SHEET 9 OF 26

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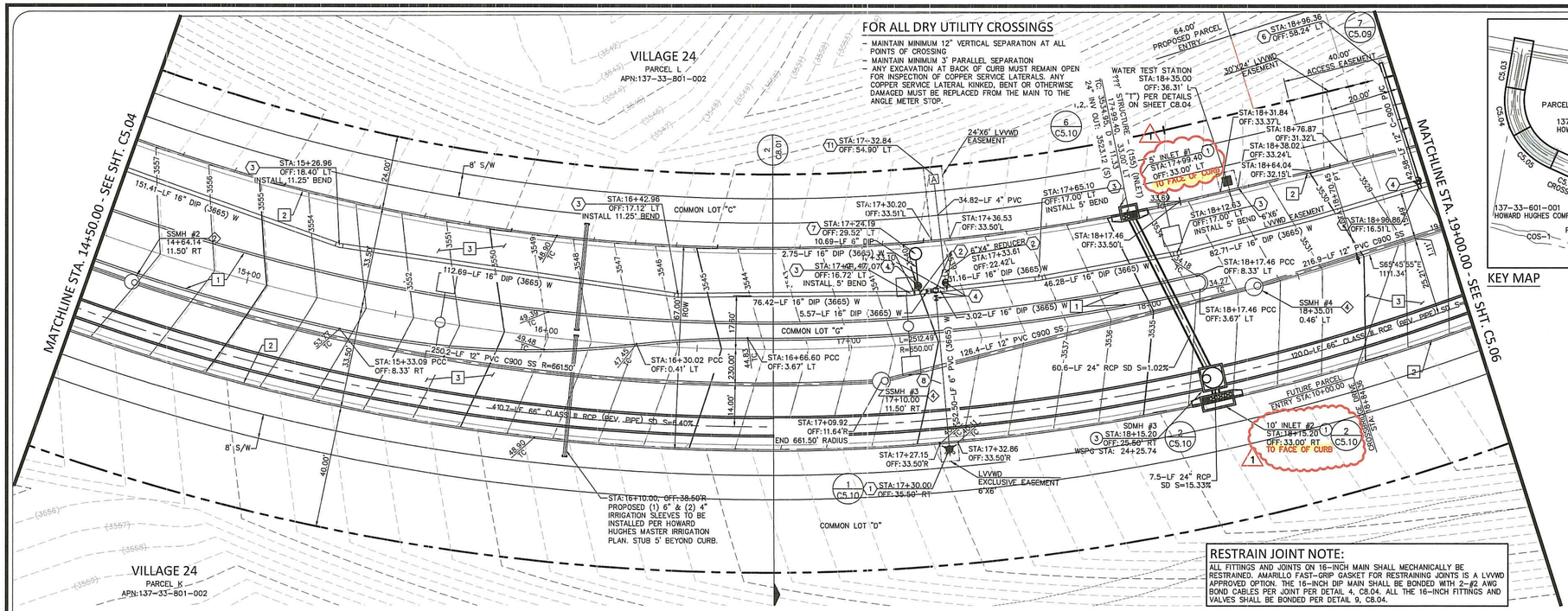

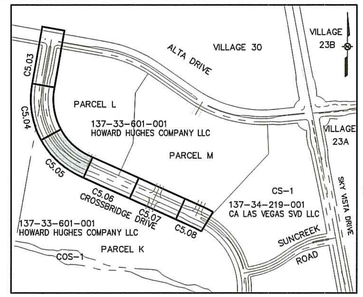

KEY MAP

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW-OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
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8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
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** CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

RESTRAIN JOINT NOTE:

ALL FITTINGS AND JOINTS ON 16–INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST–GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16–INCH DIP MAIN SHALL BE BONDED WITH 2–#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16–INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

SEWER CONNECTION NOTE:

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APPROVED FOR CONSTRUCTION

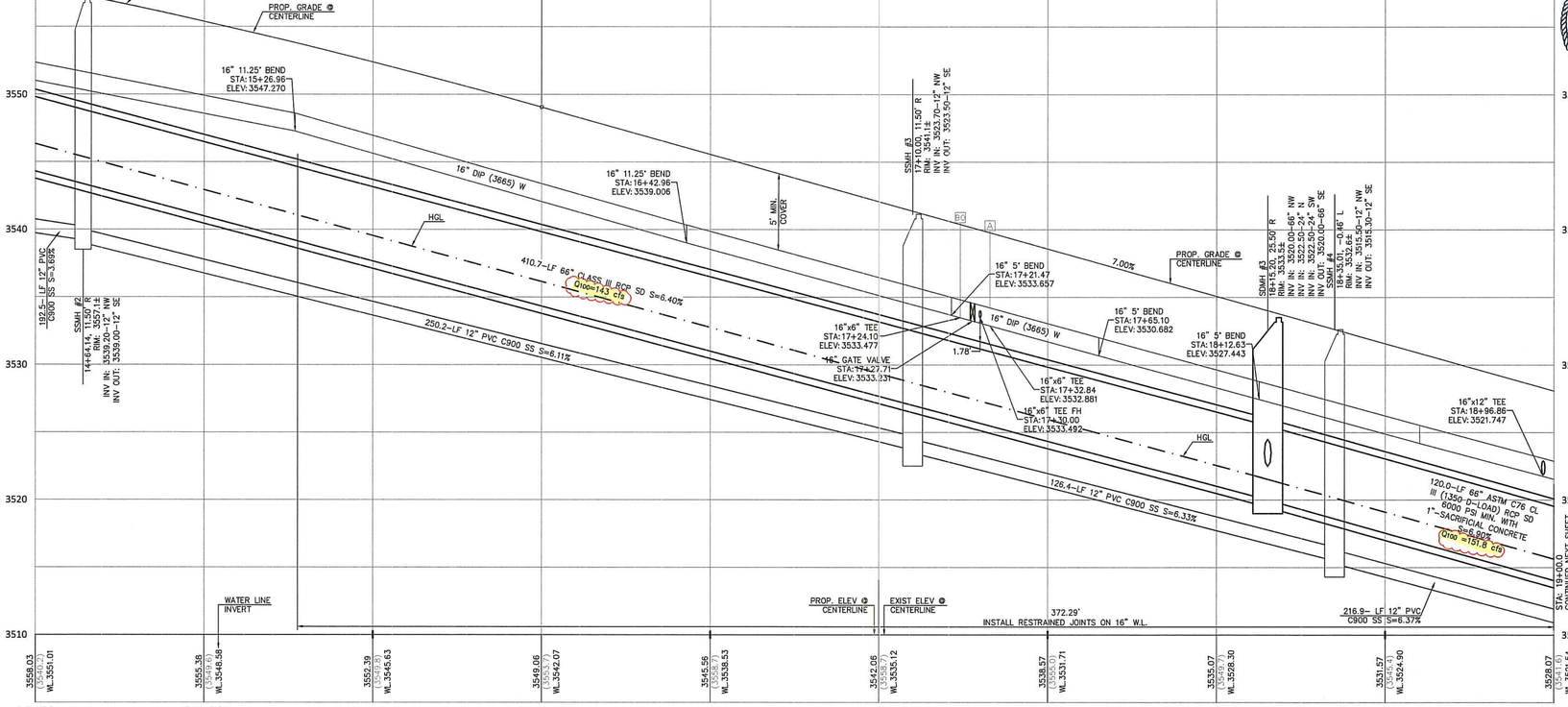
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

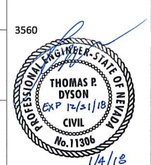
DATE. _____ PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

CROSSBRIDGE DRIVE

(PUBLIC)
SCALE: H:1"= 20'
V:1"= 5'





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IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 14+50.00 TO 19+00.00
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		ADDED SD INFO

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.05
SHEET 10 OF 26

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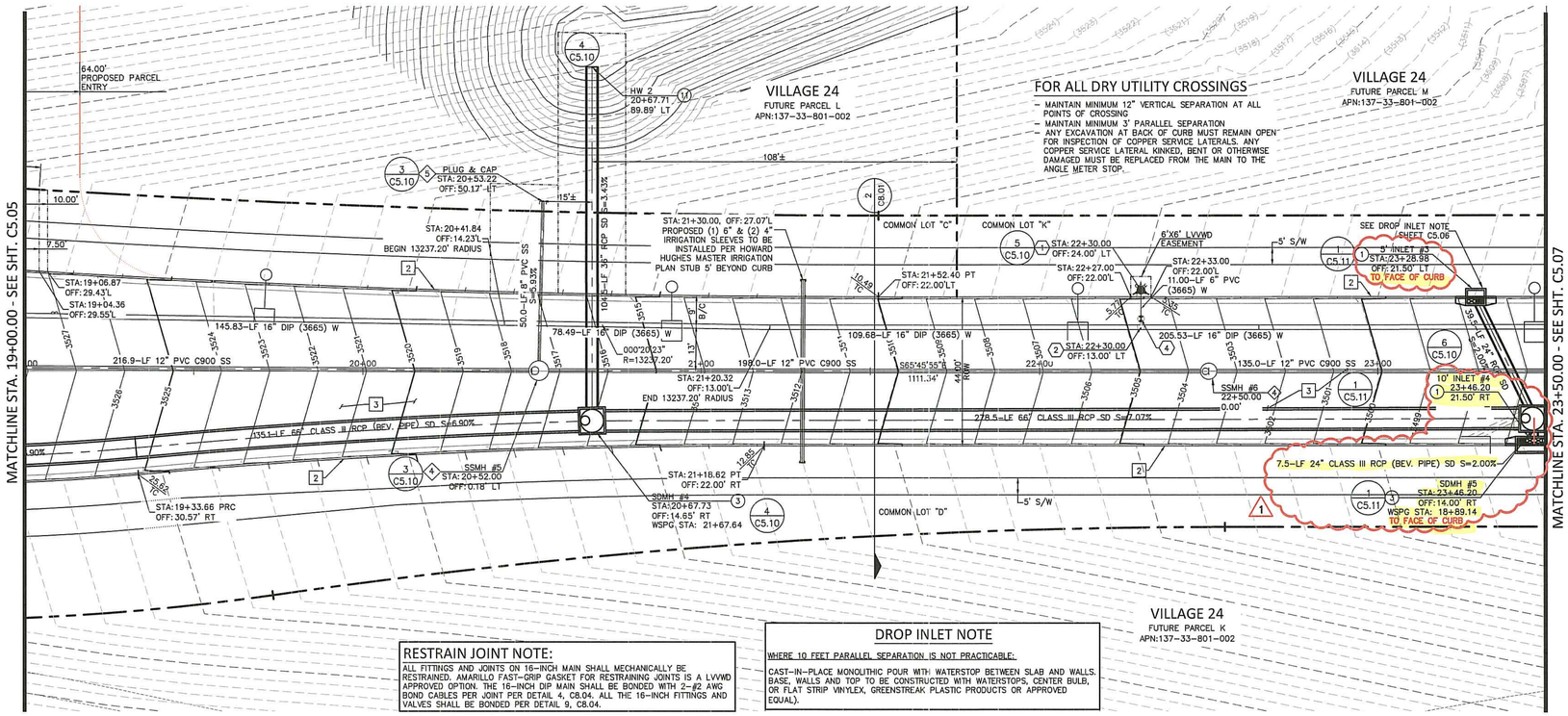

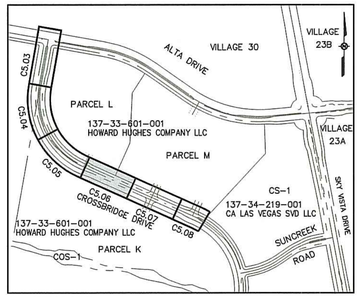

KEY MAP

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20 0 10 20

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE. _____ PROJECT NO: 124806

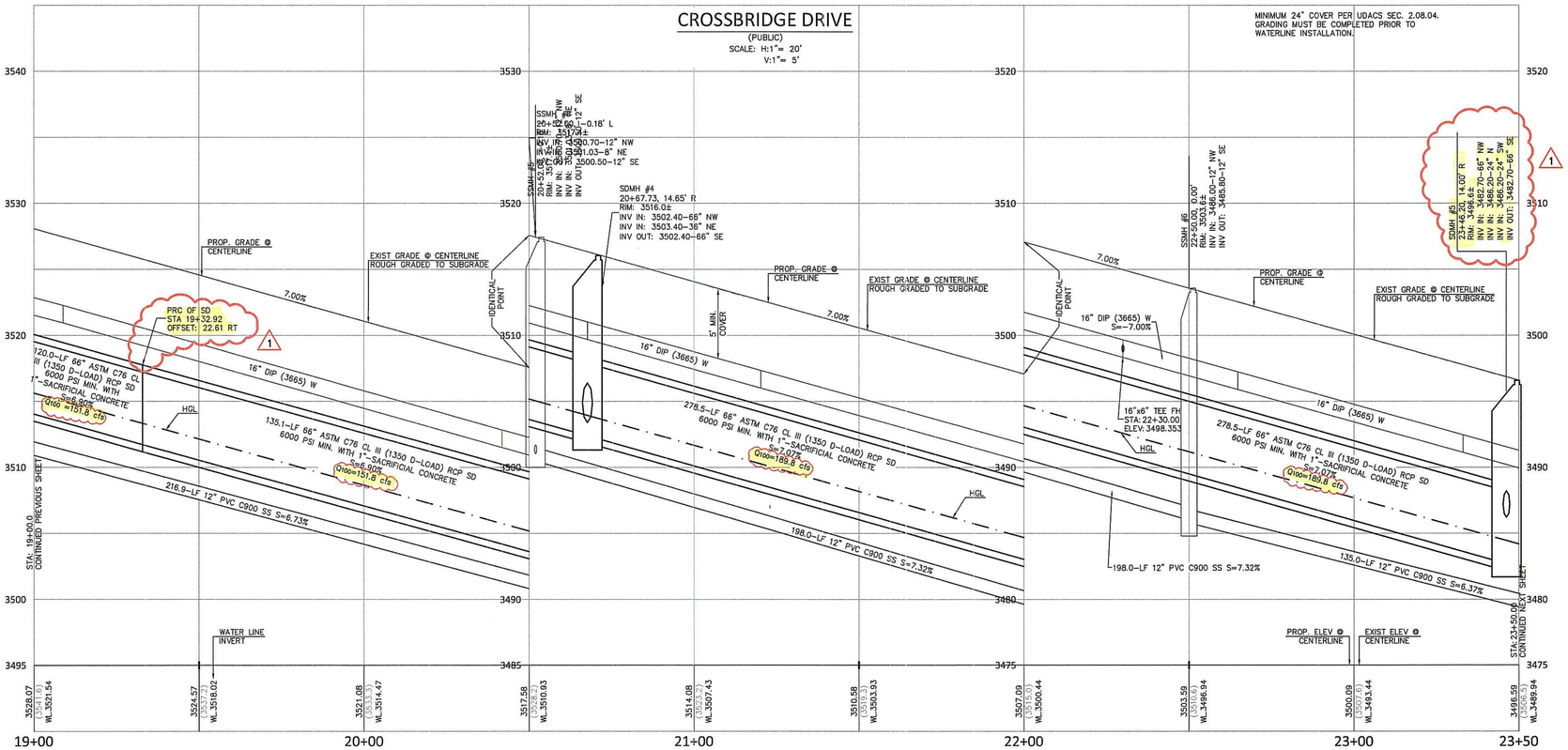
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

CROSSBRIDGE DRIVE

(PUBLIC)

SCALE: H:1"= 20'
V:1"= 5'

MINIMUM 24" COVER PER UDACS SEC. 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.



| | | |

MATCHLINE STA. 23+50.00 - SEE SHT. C5.06

MATCHLINE STA. 28+00.00 - SEE SHT. C5.08

FUTURE PARCEL ENTRY

64.00' PROPOSED PARCEL ENTRY

VILLAGE 24
PARCEL M
APN:137-33-801-002

40.00' ACCESS EASEMENT

30'X24' LVVWD EASEMENT

STA: 25+62.50 OFF: 52.02' LT

STA: 24+41.82 OFF: 43.56' LT

STA: 24+44.82 OFF: 46.06' LT

LVVWD EASEMENT 24'X6'

5' S/W

6"X4" REDUCER STA:24+41.80 OFF:17.61' LT

STA: 24+38.82 OFF: 22.06'LT

26.77–LF 4" PVC

STA: 24+35.53 OFF:13.02' LT

STA: 24+44.82 OFF: 22.06' LT

STA: 25+30.03 OFF: 22.00' LT

STA: 25+42.49 OFF: 22.00' LT

STA: 25+70.03 OFF: 22.00' LT

STA: 25+72.49 OFF: 22.00' LT

COMMON LOT "K"

27+30.00 12.92' LT

205.53–LF 16" DIP (3665) W

5.0 LF 6" DIP

3.06–LF 16" DIP

120.68–LF 16" DIP (3665) W

251.0–LF 12" PVC C900 SS

38.02–LF 12" C–900 PVC

16"X12" CROSS STA: 25+62.50 ELEV: 3474.03

167.50–LF 16" DIP (3665) W

146.00–LF 16" DIP (3665) W

S65°45'55"E 1111.34'

44.00' ROW

198.6–LF 66" CLASS III RCP SD S=6.95%

246.0–LF 12" PVC C900 SS

STA: 27+33.00 OFF: 22.00'R

STA: 27+27.00 OFF: 22.00'R

8'X6' LVVWD EASEMENT

SDMH #6 27+44.84 14.00' RT

STA: 25+72.49 OFF: 22.00' RT

STA: 25+70.06 OFF: 22.00' RT

SSMH #8 26+36.00 0.00'

STA: 25+30.06 OFF: 22.01' RT

STA: 25+42.49 OFF: 22.00' RT

40.00' ACCESS EASEMENT

STA: 25+62.50 OFF: 51.00' RT

64.00' PROPOSED PARCEL ENTRY

FUTURE PARCEL ENTRY STA:10+00.00

CROSSBRIDGE DRIVE STA: 23+50.00

SSMH #7 23+85.00 0.00'

COMMON LOT "D"

STA: 27+30.00 OFF: 27.00' RT

VILLAGE 24
PARCEL K
APN:137-33-801-002

THIS PROPERTY MAY HAVE STATIC WATER PRESSURE IN EXCESS OF 80 PSI. THE UNIFORM PLUMBING CODE REQUIRES THAT INDIVIDUAL, ON–SITE (PRIVATE), PRESSURE REDUCING VALVES BE INSTALLED WHENEVER THE PRESSURE EXCEEDS 80 PSI. PRV'S ARE THE DEVELOPER'S RESPONSIBILITY, AND WILL NOT BE INSPECTED OR INCLUDED IN THE ACCEPTANCE OF LVVWD FACILITIES.

RESTRAIN JOINT NOTE:
ALL FITTINGS AND JOINTS ON 16–INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST–GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16–INCH DIP MAIN SHALL BE BONDED WITH 2–#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16–INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

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

CROSSBRIDGE DRIVE

(PUBLIC)
SCALE: H:1"= 20'
V:1"= 5'

MINIMUM 24" COVER PER UDACS SEC. 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SSMH #7 23+85.00, 0.00' RIM: 3497.34 INV IN: 3477.20–12" NW INV OUT: 3477.00–12" SE

SSMH #8 26+36.00, 0.00' RIM: 3496.75 INV IN: 3461.08–12" NW INV OUT: 3460.76–12" SE

SSMH #6 27+44.84, 14.00' R RIM: 3488.75 INV IN: 3455.00–66" NW INV OUT: 3455.00–66" SE

5' MIN. COVER

7.00%

PROP. GRADE @ CENTERLINE

EXIST GRADE @ CENTERLINE ROUGH GRADED TO SUBGRADE

16"x6" TEE STA: 24+35.53 ELEV: 3483.958

16" GATE VALVE STA: 24+38.76 ELEV: 3483.733

16"x6" TEE STA: 24+41.82 ELEV: 3483.518

16"x6" TEE STA: 23+61.24 ELEV: 3490.489

16" DIP (3665) W

HGL

398.6–LF 66" ASTM C76 CL III (1350 D–LOAD) RCP SD 6000 PSI MIN. WITH 1"–SACRIFICIAL CONCRETE S=6.95% Qhdc=200 cfs

135.0 – LF 12" PVC C900 SS S=6.37%

251.0–LF 12" PVC Pipe C900 SS S=6.41%

STA: 23+50.00 CONTINUED PREVIOUS SHEET

268.40' INSTALL RESTRAINED JOINTS ON 16" W.L.

WATER LINE INVERT

IDENTICAL POINT

16"X12" CROSS STA: 25+74.50 ELEV: 3474.403 12" PVC W/L

1.5'

STA: 26+18.40

16"x6" TEE STA: 27+30.00 ELEV: 3463.358

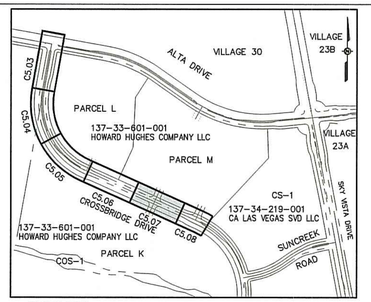
1.77'

246.0–LF 12" PVC C900 SS S=5.46%

PROP. ELEV @ CENTERLINE

EXIST ELEV @ CENTERLINE

3498.59 (3506.5) WL:3489.94	3493.09 (3501.4) WL:3486.44	3489.60 (3501.4) WL:3482.95	3486.10 (3494.0) WL:3479.45	3482.60 (3494.0) WL:3475.95	3479.10 (3487.7) WL:3472.45	3475.60 (3487.7) WL:3468.96	3472.11 (3480.1) WL:3465.46	3468.61 (3480.1) WL:3461.96	3465.11 (3469.3) WL:3458.49				
23+50	24+00	25+00	26+00	27+00	28+00								



KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'

PROFESSIONAL ENGINEER STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No.11306
1/4/18
FOR ⚠ ONLY

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW–OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
3	INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST–IN–PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	CULVERT HEADWALL
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE
**	CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:
ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"–24")
DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH–ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE. _____ PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 23+50.00 TO 28+00.00
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION
1	12/27/17	REVISED SS INFO

DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'

SHEET NUMBER
C5.07
SHEET 12 OF 26

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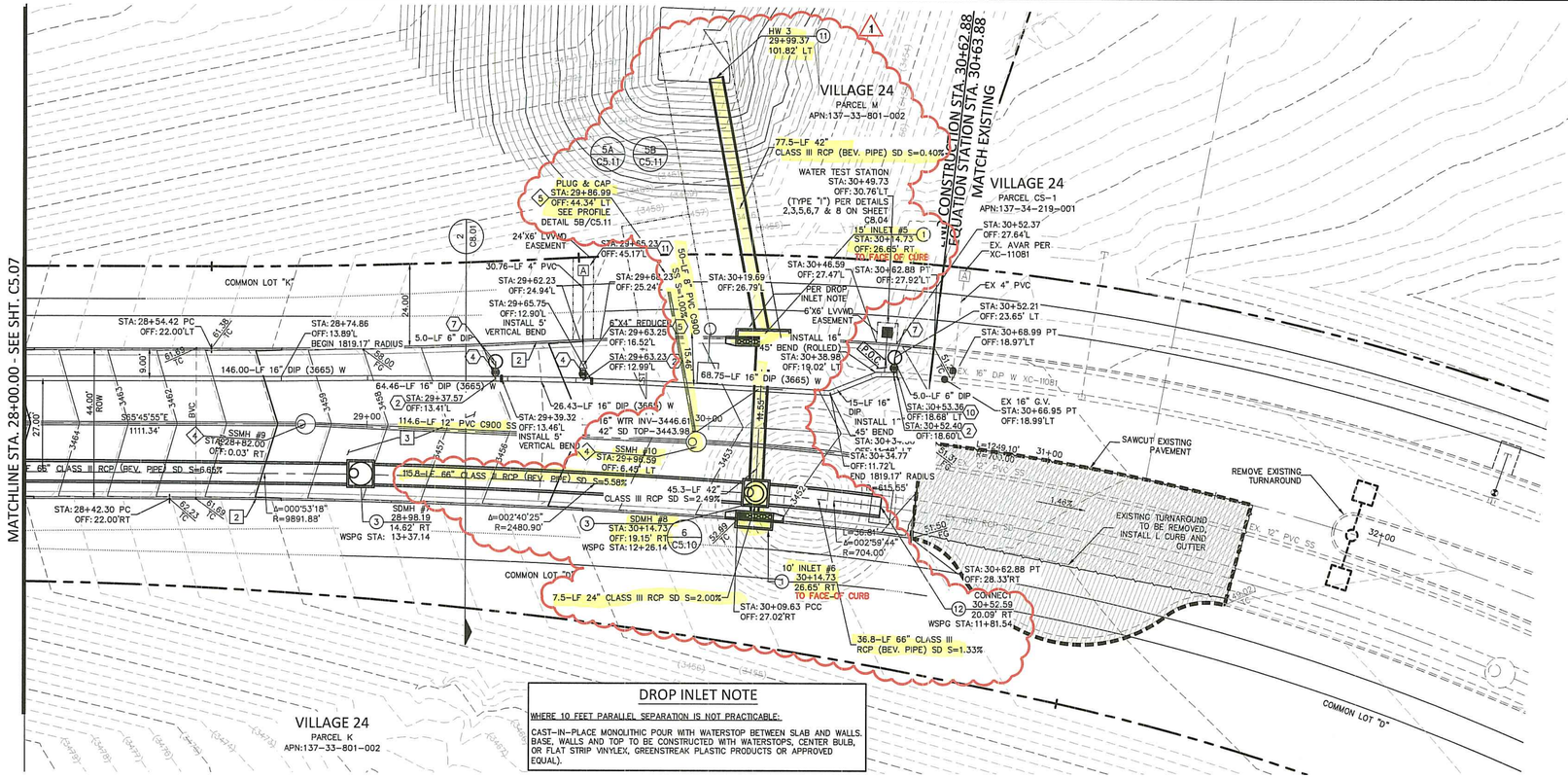
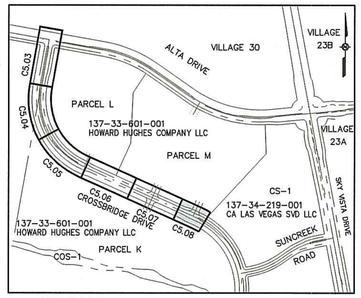


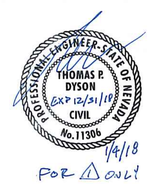


KEY MAP

GRAPHIC SCALE

20 0 10 20

SCALE: 1"=20'



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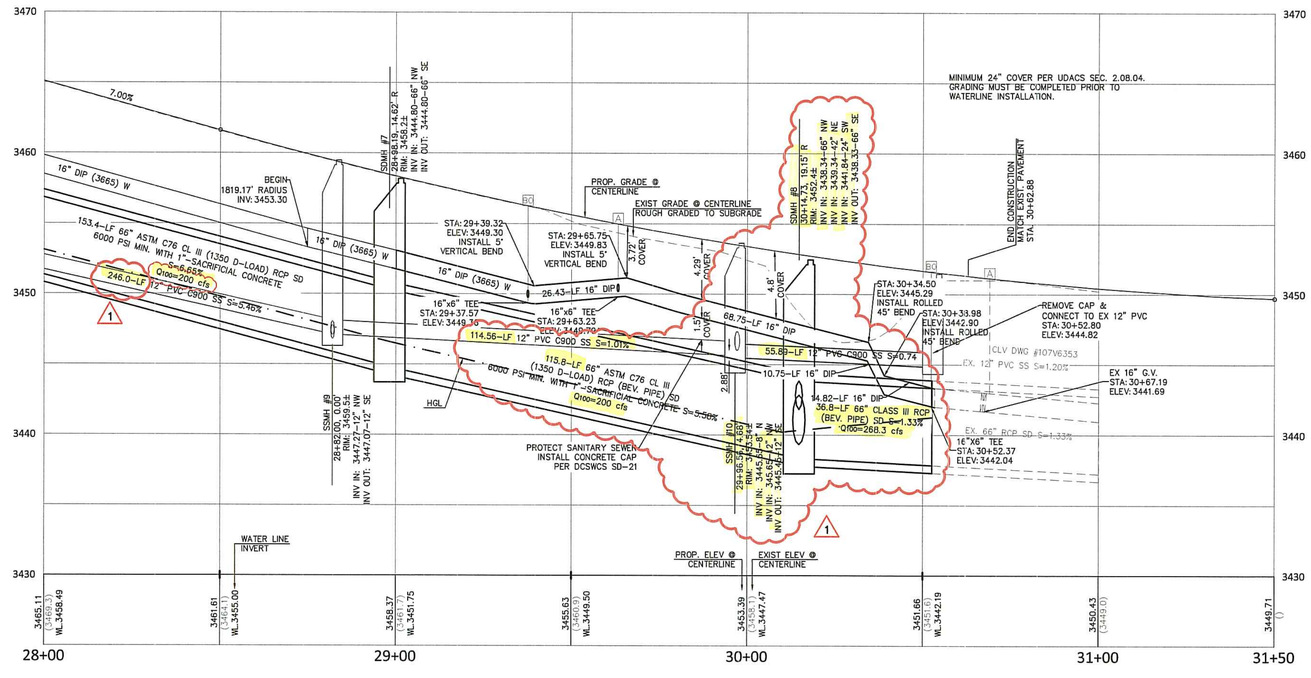
APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: _____ PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL



THIS PROPERTY MAY HAVE STATIC WATER PRESSURE IN EXCESS OF 80 PSI. THE UNIFORM PLUMBING CODE REQUIRES THAT INDIVIDUAL, ON-SITE (PRIVATE), PRESSURE REDUCING VALVES BE INSTALLED WHENEVER THE PRESSURE EXCEEDS 80 PSI. PRV'S ARE THE DEVELOPER'S RESPONSIBILITY, AND WILL NOT BE INSPECTED OR INCLUDED IN THE ACCEPTANCE OF LVVWD FACILITIES.

RESTRAIN JOINT NOTE:

ALL FITTINGS AND JOINTS ON 16-INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST-GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16-INCH DIP MAIN SHALL BE BONDED WITH 2-#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16-INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

FOR ALL DRY UTILITY CROSSINGS

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

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
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IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY PLAN & PROFILE

STA. 28+00.00 TO 30+63.00

SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3

CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		REVISED SS & SD LOCATION

CEI PROJECT: 9106

DESIGN BY: J. SALDIVAR

DRAWN BY: J. SALDIVAR

CHECKED BY: K. YAMADA

DATE: 04/2017

SCALE: 1" = 20'

SHEET NUMBER C5.08

SHEET 13 OF 26

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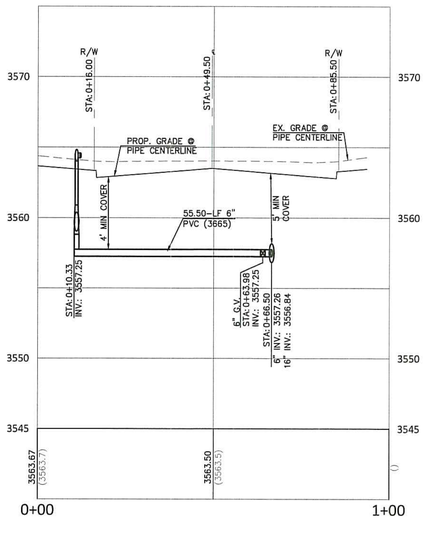
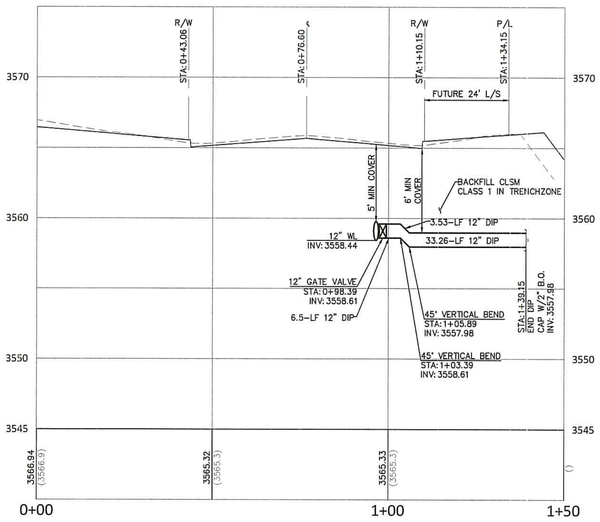


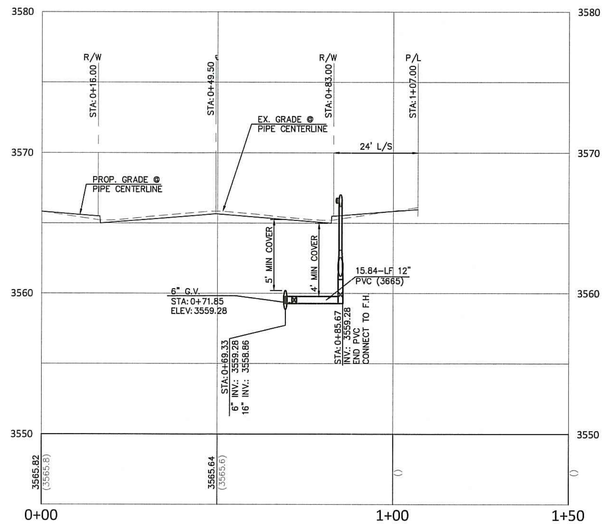
1 C5.09 F.H. LATERAL - STA: 7+30.00 (REF. SHEET C5.03)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



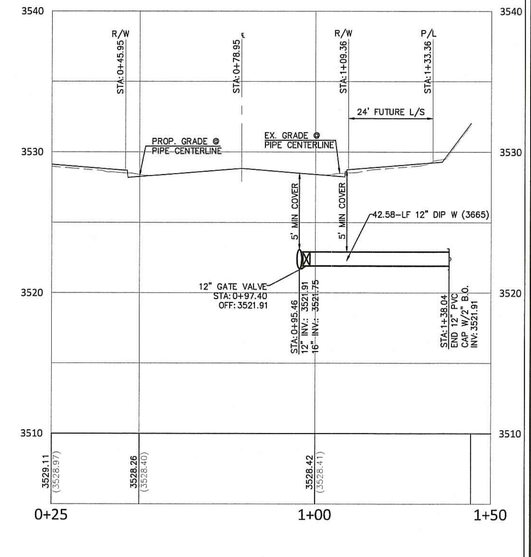
2 C5.09 12" WATER LATERAL - STA: 12+30.00 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



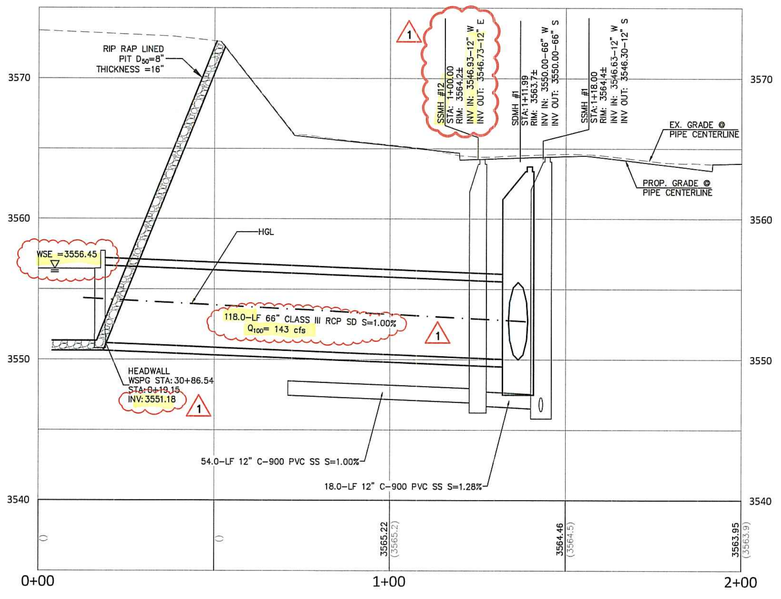
3 C5.09 F.H. LATERAL - STA: 12+06.31 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



7 C5.09 12" WATER LATERAL - STA: 18+96.38 (REF. SHEET C5.05)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



4 C5.09 SSMH #1 - STA: 12+75.00 (REF. SHEET C5.04)

PROFILE VIEW
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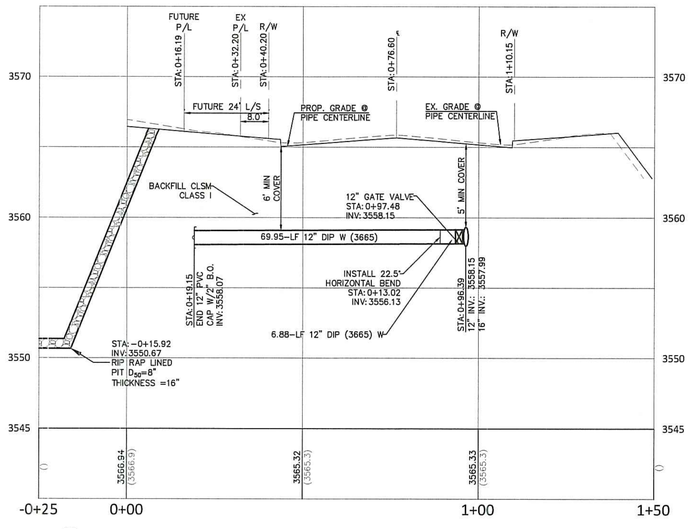
V: 1"=5'



5 C5.09 12" WATER LATERAL - STA: 12+58.00 (REF. SHEET C5.04)

PROFILE VIEW
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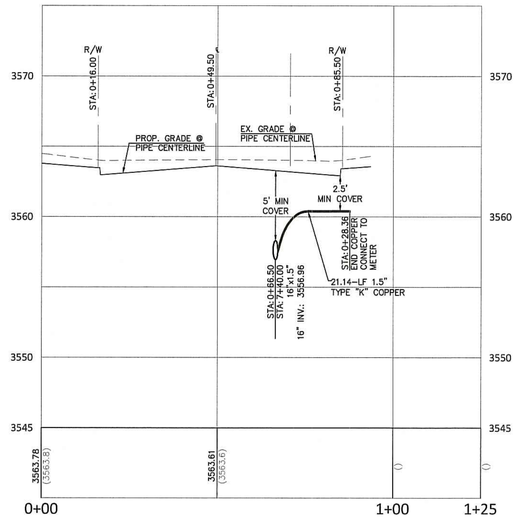
V: 1"=5'



6 C5.09 TYPE "K" COPPER - STA: 7+40.00 (REF. SHEET C5.03)

PROFILE VIEW
H: 1"=20'
V: 1"=5'

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11306

1/4/18
FOR 1 ONLY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE. _____ PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST–IN–PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

COLLINS ENGINEERS
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IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

UTILITY LATERALS 1

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		REVISED SD & SS INFO

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C5.09
SHEET 14 OF 26

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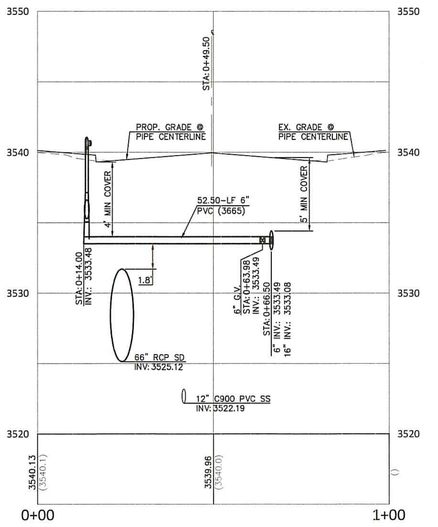

1 / C5.10 — F.H. LATERAL - STA: 17+30.00 (REF. SHEET C5.05) — PROFILE VIEW
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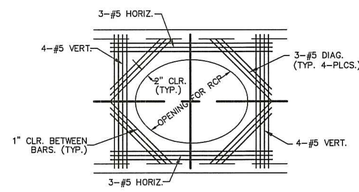
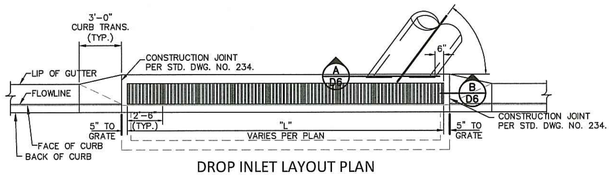
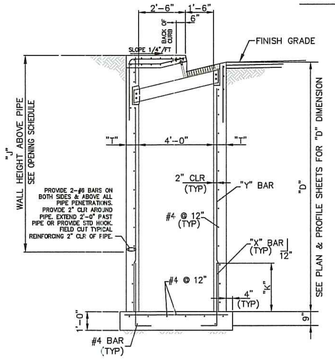
V: 1"=5'



SECTION "A"

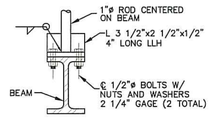


DROP INLET LAYOUT PLAN

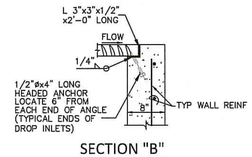


DIMENSIONS			"X" BARS	"Y" BARS
"D"	"T"	"K"		
D ≤ 7'-0"	8"	2'-0"	#4 @ 12"	#4 @ 12"
7'-0" < D ≤ 9'-0"	8"	2'-6"	#5 @ 12"	#5 @ 12"
9'-0" < D ≤ 10'-6"	8"	2'-6"	#5 @ 6"	#5 @ 8"
10'-6" < D ≤ 13'-3"	10"	2'-6"	#5 @ 4"	#5 @ 4"
13'-3" < D ≤ 14'-6"	12"	3'-0"	#6 @ 4"	#6 @ 4"

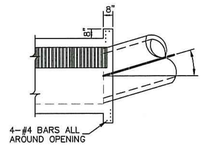
TYPICAL CATCH BASIN SECTION
NOT TO SCALE



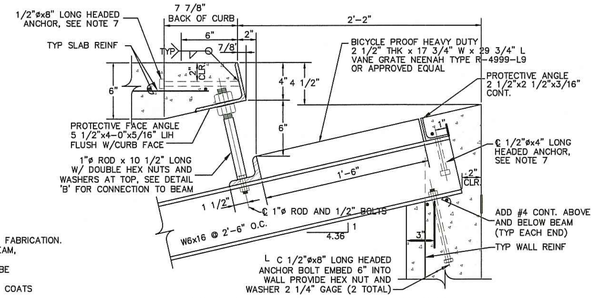
DETAIL "B"



SECTION "B"



ALTERNATE CONNECTION DETAIL

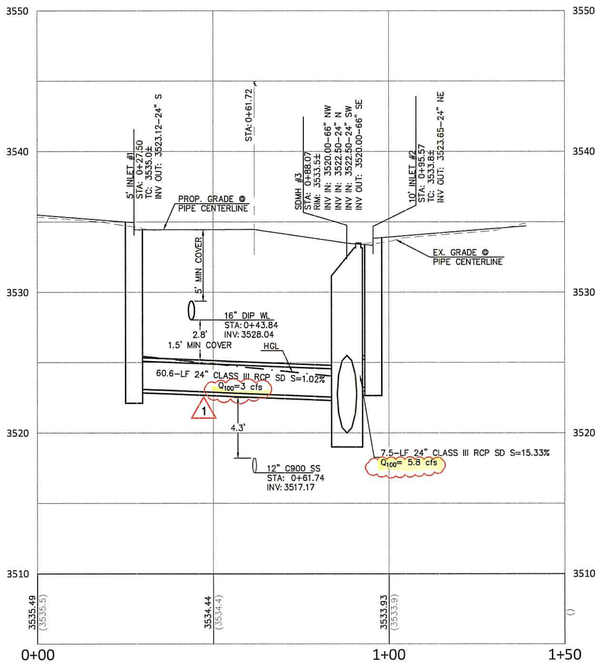


PROTECTIVE FACE & ROD - DETAIL "A"

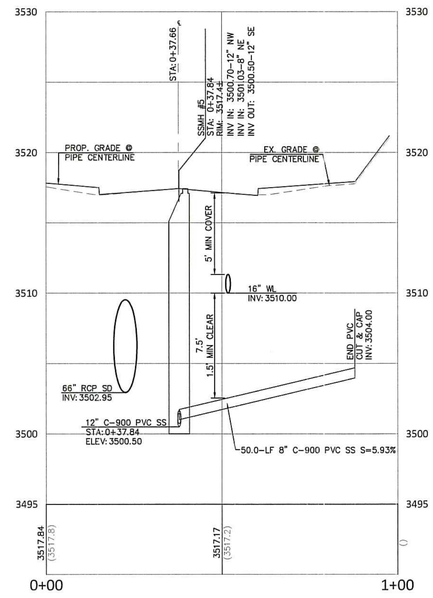
NOTES:

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

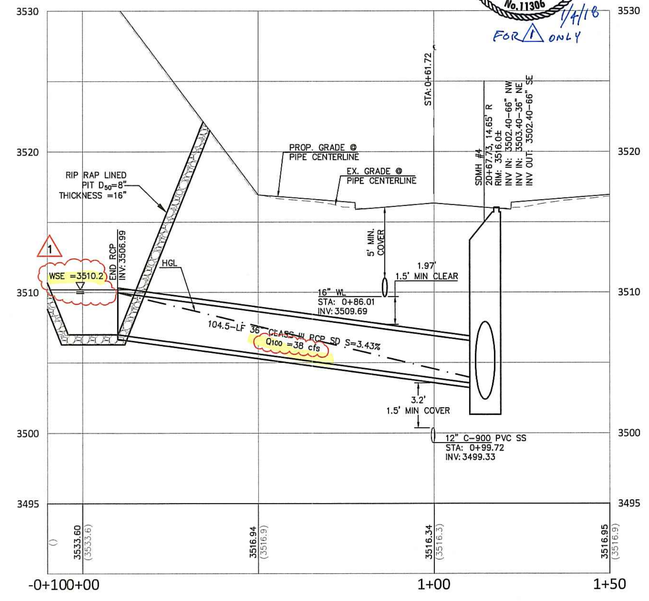
6 / C5.10 — DROP INLET DETAIL — NTS



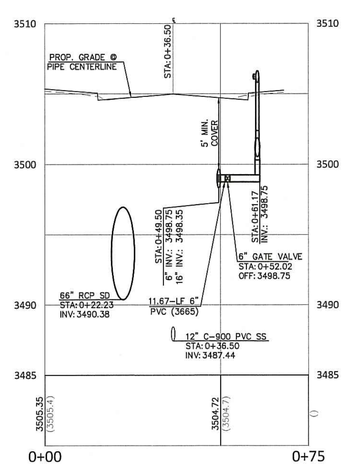
2 / C5.10 — SDMH #3 - STA: 18+15.20 (REF. SHEET C5.05) — PROFILE VIEW
H: 1"=20'
V: 1"=5'



3 / C5.10 — SSMH #5 - STA:20+52.00 (REF. SHEET C5.06) — PROFILE VIEW
H: 1"=20'
V: 1"=5'



4 / C5.10 — SDMH #4 - STA:20+67.73 (REF. SHEET C5.06) — PROFILE VIEW
H: 1"=20'
V: 1"=5'



5 / C5.10 — F.H. LATERAL - STA:22+30.00 (REF. SHEET C5.04) — PROFILE VIEW
H: 1"=20'
V: 1"=5'

DROP INLET NOTE
WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE _____ PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11305
1/4/18
FOR 1 ONLY

COLLINS ENGINEERS
3130 S. DURANGO DR. SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
UTILITY LATERALS 2
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

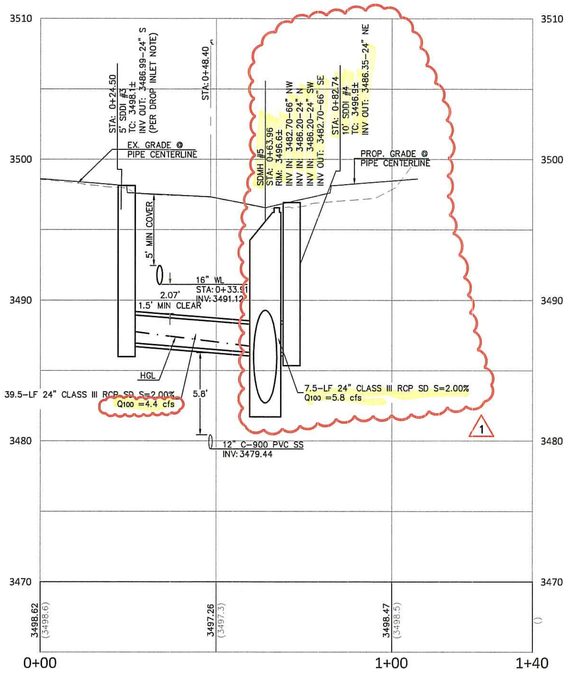
NO.	DATE	DESCRIPTION
1	12/27/17	REVISED SD INFO

DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C5.10
SHEET 15 OF 26

F:\PROJECTS\600\62024-223\DWG\PRODUCTION\9106-C5.09-SDLATS.DWG 01/03/2018 03:18:12 PM



1 / C5.11 — SDMH #5 - STA:23+46.20 (REF. SHEET C8.03)

PROFILE VIEW
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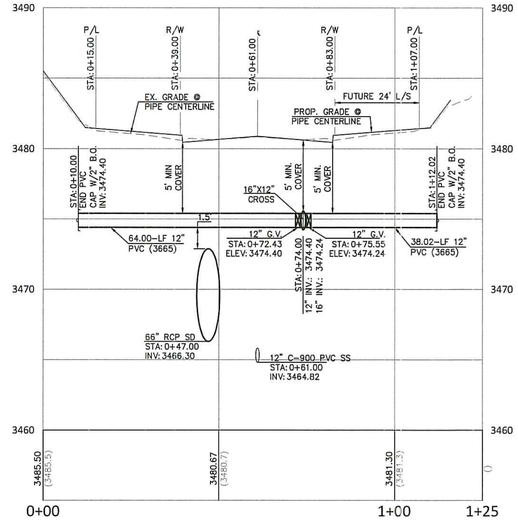
V: 1"=5'



2 / C5.11 — 12" WATER LATERAL - STA: 25+62.50 (REF. SHEET C5.07)

PROFILE VIEW
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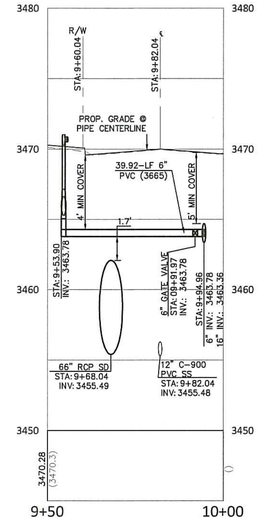
V: 1"=5'



3 / C5.11 — F.H. LATERAL - STA: 27+30.00 (REF. SHEET C5.07)

PROFILE VIEW
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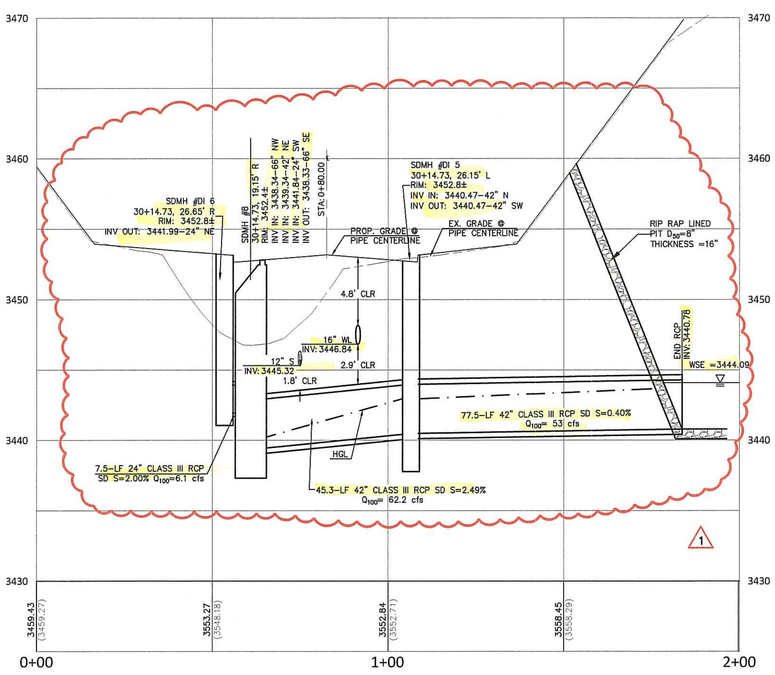
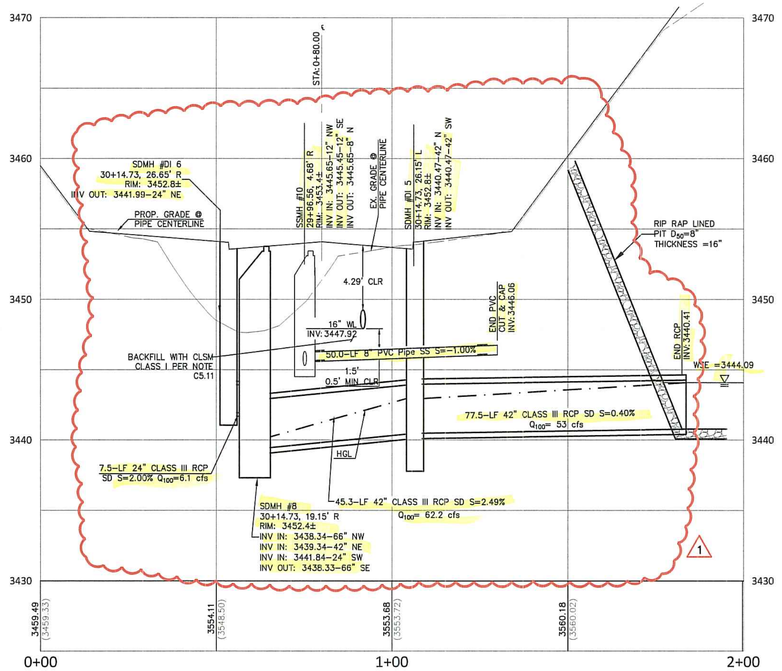
V: 1"=5'



5A / C5.11 — SDMH 8 - STA: 30+14.73 WITHOUT SS (REF. SHEET C5.08) 1

PROFILE VIEW
H: 1"=20'
V: 1"=5'



5B / C5.11 — SSMH #10 - STA: 29+96.56 (REF. SHEET C5.08) 1

PROFILE VIEW
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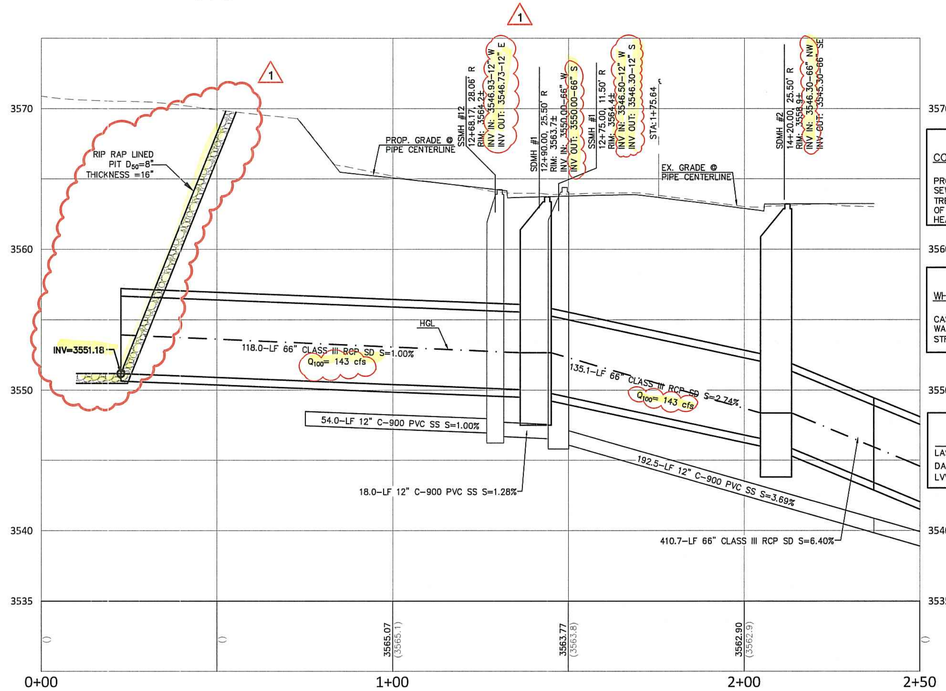
V: 1"=5'



6 / C5.11 — SDMH 1 - STA: 12+49.17 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'

THOMAS P. DYSON — PROFESSIONAL ENGINEER — STATE OF NEVADA — CIVIL — No. 11308 — EXP 12/31/18 — 1/4/18 — FOR △1 ONLY

CONTROLLED LOW STRENGTH MATERIAL (CLSM)

PROTECT WATERLINES IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I CONTROLLED LOW STRENGTH MATERIAL (CLSM) TO THE SPRINGLINE OF THE WATERLINE. THIS REQUIREMENT IS FOR STRUCTURAL SUPPORT ONLY. ADDITIONAL HEALTH REGULATIONS MAY APPLY PER UDACS 2.22

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST–IN–PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE. PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY LATERALS 2

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DESCRIPTION	DATE	DESIGN BY
1	REVISED SS & SD LOCATION	12/27/17	

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	
SHEET NUMBER	C5.11
	SHEET 16 OF 26

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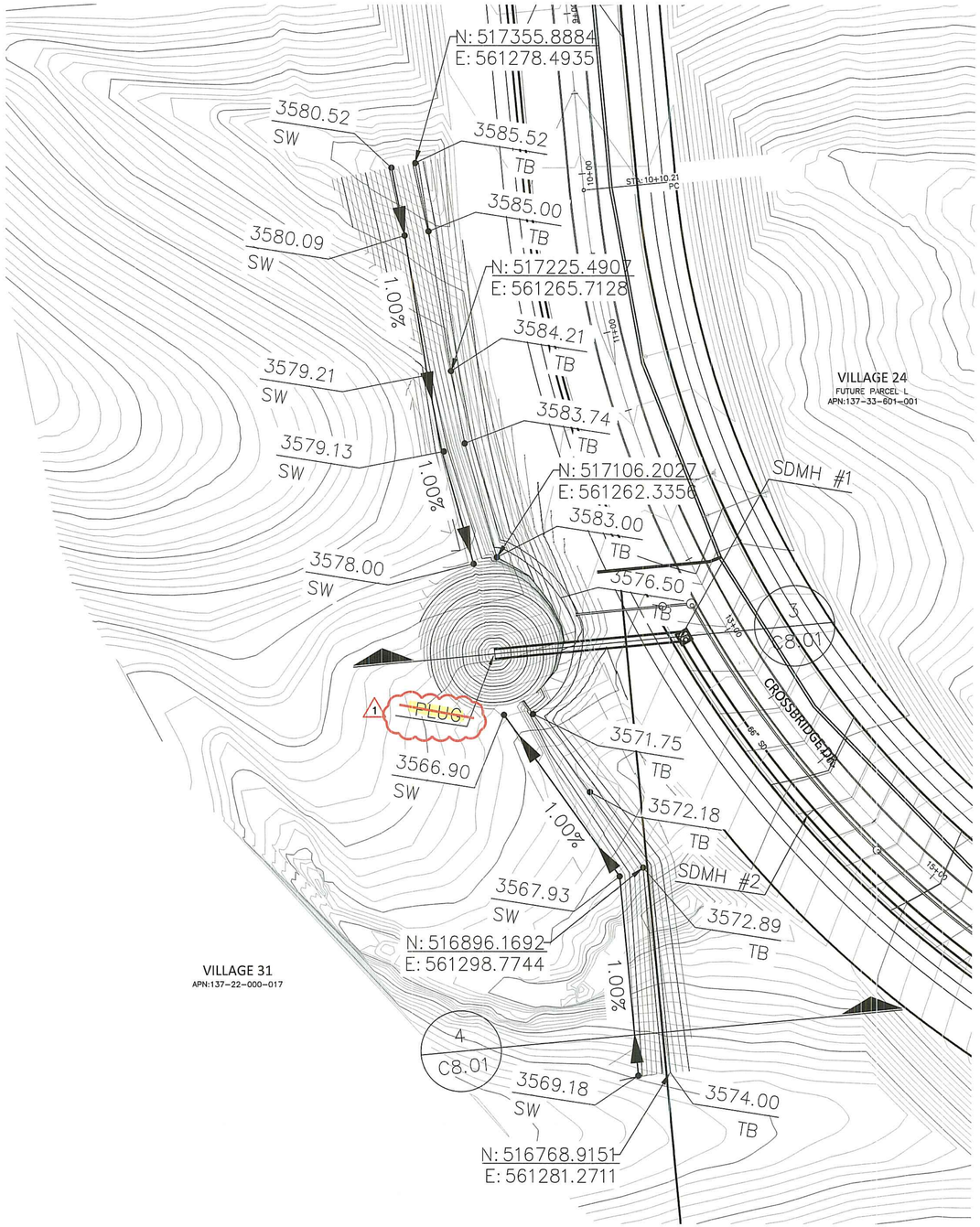

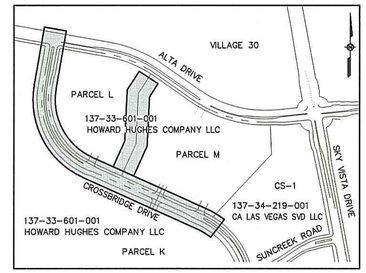

KEY MAP
NTS

GRAPHIC SCALE
40 0 20 40
SCALE: 1"=40'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

PROFESSIONAL ENGINEER STATE OF NEVADA
THOMAS P. DYSON
CIVIL
No. 11306
EXP 12/31/18
9/4/18
FOR ⚠1 ONLY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: _____ PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

CALL BEFORE YOU D&G
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511 CLARK COUNTY TRAFFIC ENGINEERING AND
CALL 1-702-432-5300 INTERNET AND AERIAL SYSTEM OF TRANSPORTATION

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED		EXISTING	PROPOSED	
(0.00%)	0.00%	SLOPE			AC PAVEMENT
(0.00) XX	0.00 XX	ELEVATION TAG			6" TYPE "A" CURB
Ⓓ	Ⓓ	STORM MANHOLE			24" TYPE "L" CURB & GUTTER
		DROP INLET			30" ROLL CURB
-00-	-00-	CONTOUR			
		RETAINING WALL			
		SCREEN WALL			

PL-RIGHT-OF-WAY
PL-ADJACENT
CENTERLINE
EASEMENT LINE
FLOW LINE
SAWCUT LINE

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
ROUGH GRADING PLAN 2
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION
⚠1	12/27/17	REVISED SD INFO

DESIGN BY:

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=40

SHEET NUMBER
C5.13
SHEET 18 OF 26

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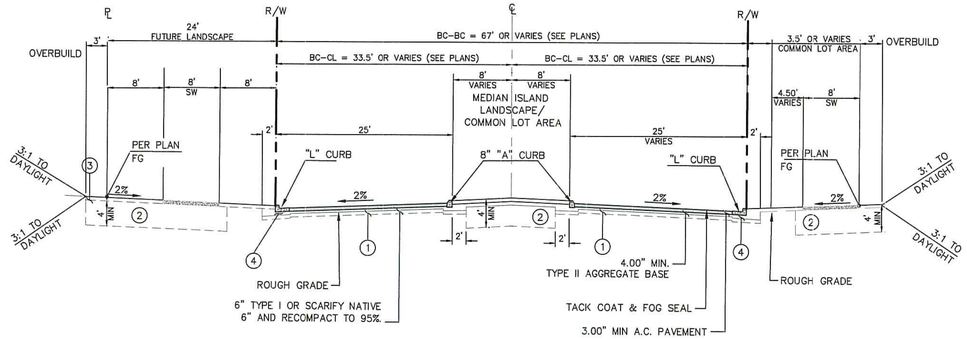
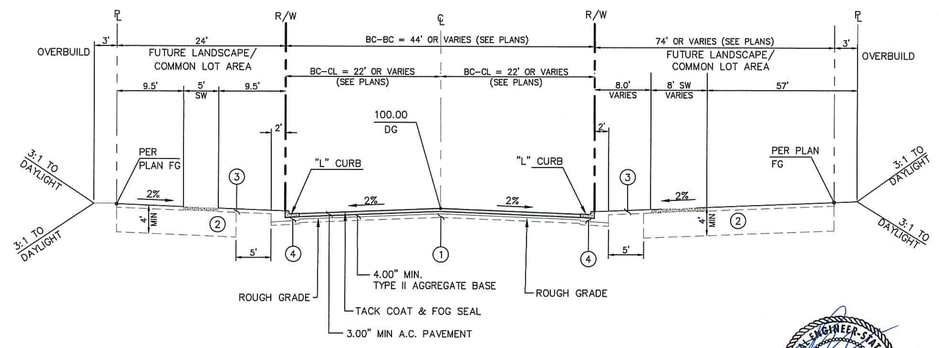
NOTES:

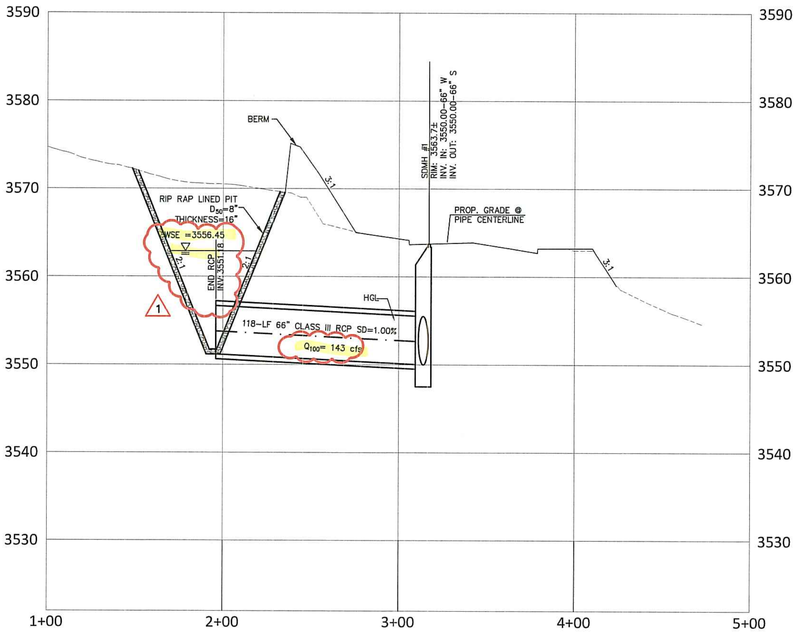
1. TYPE 1 OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%
2. LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% RIP ENTIRE AREA TO DEPTH INDICATED.
3. ROUGH GRADE (R.G.) TO BE 6" BELOW FINISHED GRADE (F.G.) FOR FUTURE LANDSCAPE PURPOSES.
4. 6" MIN TYPE II AGGREGATE BASE UNDER CURB AND GUTTER,TYPICAL



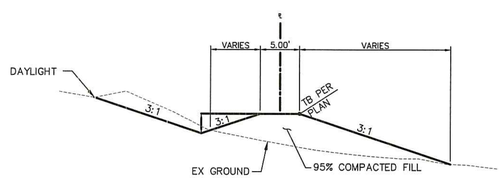
1 C8.01 — CROSSBRIDGE DRIVE
STA 6+25.51 THRU STA 12+24.51 NTS



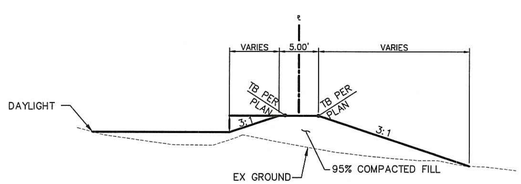
2 C8.01 — CROSSBRIDGE DRIVE
STA 13+79.24 THRU STA 30+60.00 NTS



3 C8.01 — 66" STORM DRAIN LINE
@ STA: 13+01.69 H: 1"=20' V: 1"=5'



4 C8.01 — TEMPORARY DIVERSION BERM
NTS



5 C8.01 — TEMPORARY DIVERSION BERM
NTS

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO: 124806 DATE: _____

COLLINS ENGINEERS
3130 S. DURANGO DR. SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

PROFESSIONAL ENGINEER-STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11306
1/4/18
FOR ⚠ 1 ONLY

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

DETAILS SHEET 1

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
⚠ 1	12/27/17		REVISED SD INFO

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	
SHEET NUMBER	C8.01
	SHEET 23 OF 26

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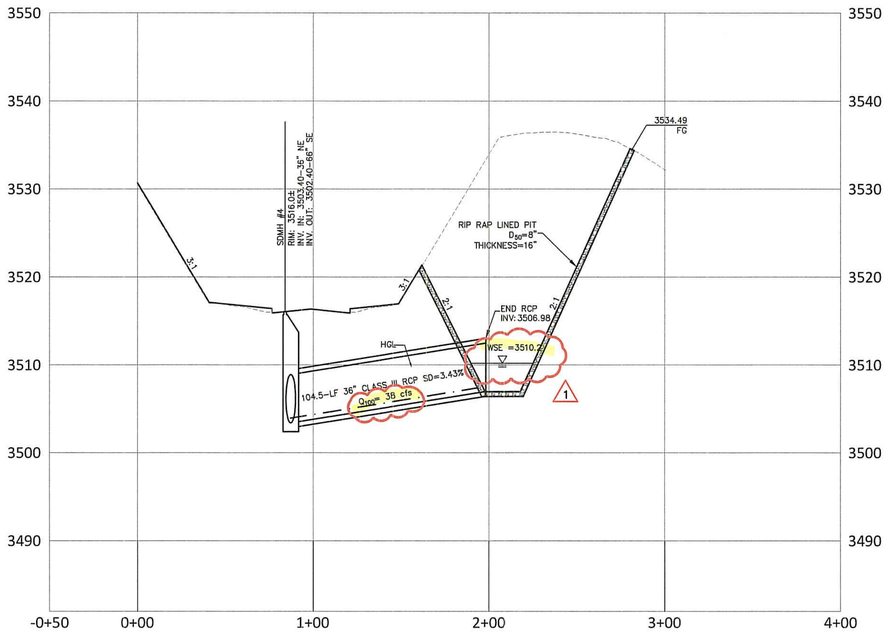
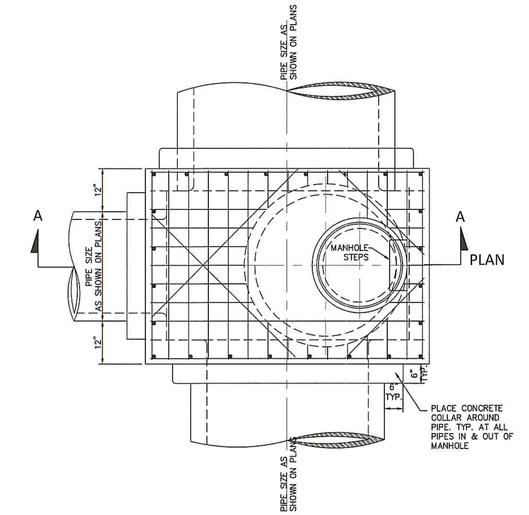


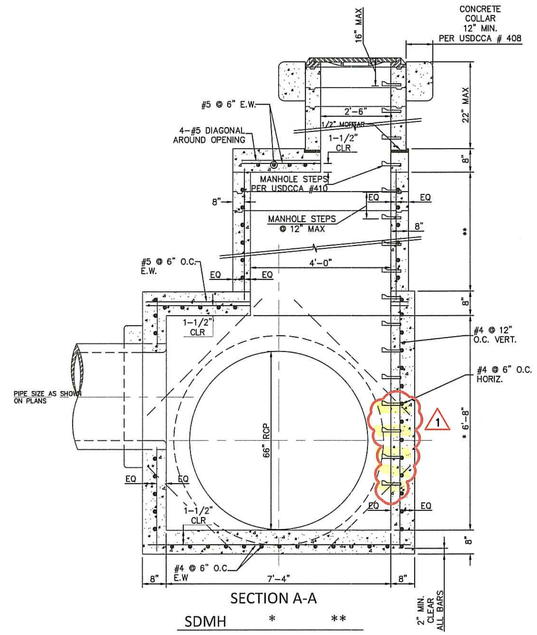
6
C8.02

36" STORM DRAIN LINE

@ STA: 20+67.73

H: 1"=20'
V: 1"=5'





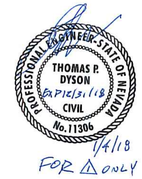
SECTION A-A

SDMH	*	**
1	6'-8"	4'-0"
2	6'-8"	3'-0"
3	6'-8"	4'-0"
4	6'-8"	4'-0"
5	10'-0"	1'-0"
6	6'-8"	4'-0"
7	6'-8"	4'-0"
8	6'-8"	5'-0"

7
C8.02

MANHOLE DETAIL

NTS



1/4/18
FOR Δ ONLY

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

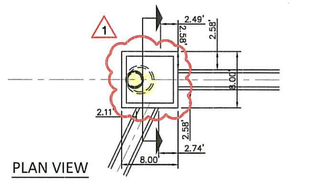
APN: 137-33-601-001

DETAILS SHEET 2

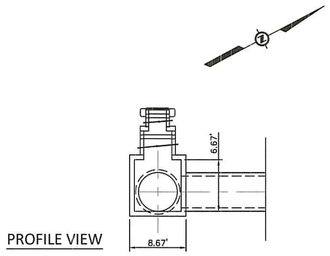
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION	DESIGN BY
1	12/27/17	CONTINUE STEPS TO BOTTOM OF STRUCTURE	

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	
SHEET NUMBER	C8.02
	SHEET 24 OF 26

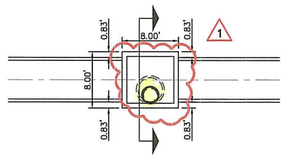


PLAN VIEW

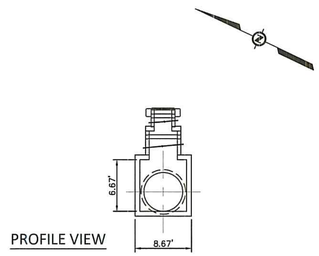


PROFILE VIEW

A C8.03 SDMH #1 NTS

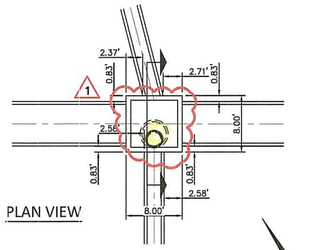


PLAN VIEW

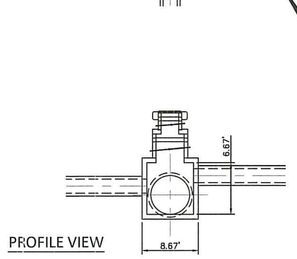


PROFILE VIEW

B C8.03 SDMH #2 NTS

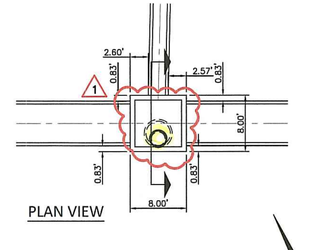


PLAN VIEW

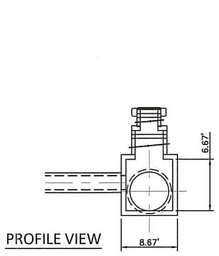


PROFILE VIEW

C C8.03 SDMH #3 NTS

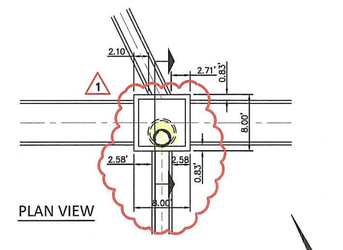


PLAN VIEW

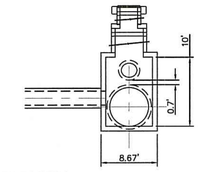


PROFILE VIEW

D C8.03 SDMH #4 NTS

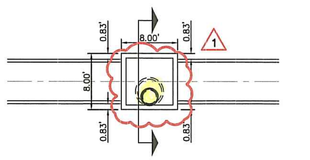


PLAN VIEW

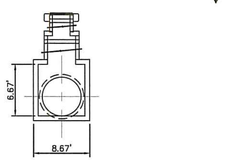


PROFILE VIEW

E C8.03 SDMH #5 NTS

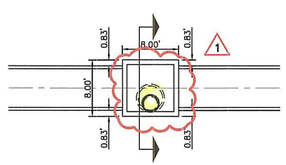


PLAN VIEW

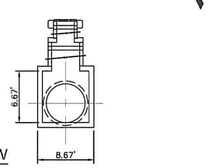


PROFILE VIEW

F C8.03 SDMH #6 NTS

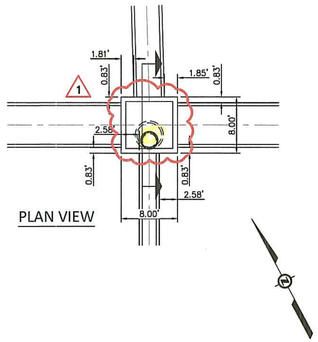


PLAN VIEW

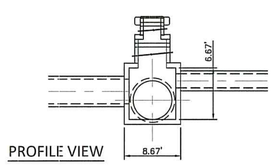


PROFILE VIEW

G C8.03 SDMH #7 NTS



PLAN VIEW



PROFILE VIEW

H C8.03 SDMH #8 NTS

THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11306
PROFESSIONAL ENGINEER, STATE OF NEVADA
1/4/18
FOR ⚠1 ONLY

COLLINS ENGINEERS
3130 S. DURANGO DR. SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

DETAILS SHEET 3

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
⚠1	12/27/17		REVISED CEI INFO

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C8.03
SHEET 25 OF 26

F:\PROJECTS\600\62024-223\DWG\PRODUCTION\9106-C8.01-DTL.DWG 01/03/2018 04:14:44 PM

SUMMERLIN

SM

VILLAGE 24

CROSSBRIDGE DRIVE UNIT 3

STREET IMPROVEMENT PLANS

FROM ALTA DRIVE TO CROSSBRIDGE UNIT 2

SID #812 PROJECTS 10A & B

2015

A.P.N. 137-33-601-001

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11906
1/2/18
FOR Δ ONLY

REV#	REV. DESCRIPTION	SHEET(S)	APPD BY	DATE
Δ	REVISED SD & SS NOTES	4-6, 9-19		
		16, 18, 23, 25		

SHEET INDEX

1.	C1.01	COVER AND APPROVAL SHEET
2.	C1.02	GENERAL NOTES SHEET
3.	C3.01	HORIZONTAL CONTROL PLAN
4.	C4.01	MASTER GRADING PLAN
5.	C5.00	SEWER MASTER PLAN
6.	C5.01	STORM DRAIN MASTER PLAN
7.	C5.02	WATER MASTER PLAN
8.	C5.03	UTILITY PLAN AND PROFILE – STA: 5+87.51 TO 10+00.00
9.	C5.04	UTILITY PLAN AND PROFILE – STA: 10+00.00 TO 14+50.00
10.	C5.05	UTILITY PLAN AND PROFILE – STA: 14+50.00 TO 19+00.00
11.	C5.06	UTILITY PLAN AND PROFILE – STA: 19+00.00 TO 23+50.00
12.	C5.07	UTILITY PLAN AND PROFILE – STA: 23+50.00 TO 28+00.00
13.	C5.08	UTILITY PLAN AND PROFILE – STA: 28+00.00 TO 30+63.00
14.	C5.09	UTILITY LATERALS 1
15.	C5.10	UTILITY LATERALS 2
16.	C5.11	UTILITY LATERALS 3
17.	C5.12	ROUGH GRADING PLAN 1
18.	C5.13	ROUGH GRADING PLAN 2
19.	C6.01	SIGNAGE AND STRIPING PLAN 1
20.	C6.02	SIGNAGE AND STRIPING PLAN 2
21.	C6.03	STREET LIGHTING PLAN 1
22.	C6.04	STREET LIGHTING PLAN 2
23.	C8.01	DETAILS SHEET 1
24.	C8.02	DETAILS SHEET 2
25.	C8.03	DETAILS SHEET 3
26.	C8.04	DETAILS SHEET 4

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

APPROVALS

APPROVAL OF THESE PLANS IS LIMITED TO THOSE IMPROVEMENT CONSTRUCTED IN THE DEDICATED RIGHT-OF-WAY AND/OR DEDICATED EASEMENTS. THIS APPROVAL DOES NOT AUTHORIZE THE CONSTRUCTION OF ANY IMPROVEMENTS THAT DEVIATE FORM ADOPTED STANDARDS AND/OR SPECIFICATIONS EXCEPT THOSE SPECIFICALLY LISTED UNDER "DEVIATIONS FROM STANDARD." THE ENGINEER SHALL RESOLVE ANY DEVIATION OTHER THAN THOSE LISTED IN "DEVIATIONS FROM STANDARDS" IN FAVOR OF THE UNIFORM STANDARD DRAWINGS AND SPECIFICATIONS CLARK COUNTY AREA 1992.

ALLEN PAVELKA, PE #9029
CITY ENGINEER — 10-4-17 DATE

APPROVED FOR CONSTRUCTION
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: 8/31/17 PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL
(SHEETS: C1.01, C1.02 and C4.01, C5.02–C5.11, C5.13, C6.03, C6.04, C8.01, C8.04)

LAS VEGAS FIRE & RESCUE — 8/29/17 DATE

N/A
CITY OF LAS VEGAS PLANNING DEPARTMENT — DATE
THIS PLAN CONFORMS TO THE APPLICABLE STANDARDS OF THE PLANNING DEPARTMENT.

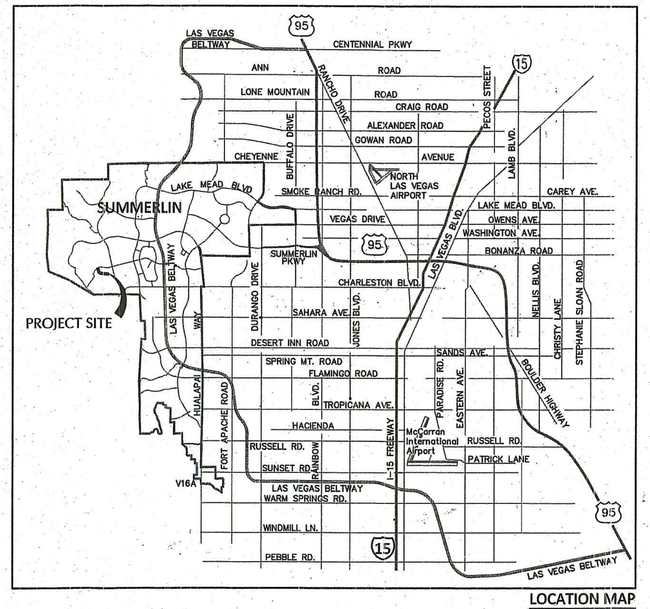
THE HOWARD HUGHES COMPANY, LLC
N/A
KEVIN ORROCK — DATE
TITLE: VICE PRESIDENT

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.
Barbara Jamison — 8.24.17
NV ENERGY — DATE

"THE AFFIXED CENTURYLINK CORPORATION 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."
8/24/17
CENTRAL TELEPHONE CO. D/B/A CENTURY LINK — DATE

9/12/17
COX COMMUNICATIONS LAS VEGAS, INC. — DATE

9.14.17
SOUTHWEST GAS CORPORATION — DATE
1074 7063



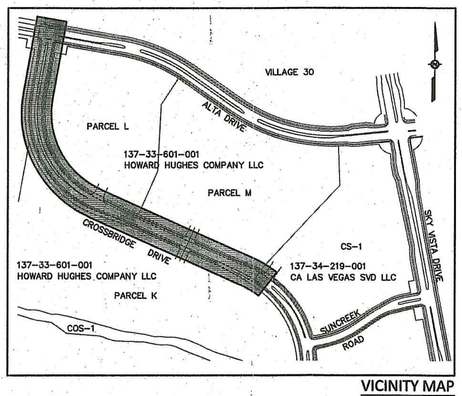
LOCATION MAP
NTS

LEGAL DESCRIPTION

THAT PORTION OF PARCEL 2 AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE LYING WITHIN SECTIONS 33 AND 34, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AND SECTIONS 3 AND 4, TOWNSHIP 21 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA.

OWNER/DEVELOPER

HOWARD HUGHES COMPANY, LLC
10801 CHARLESTON BLVD., 3RD FLOOR
LAS VEGAS, NEVADA 89146
OFFICE PHONE NO. (702) 791-4300
OFFICE FAX NO. (702) 791-4450



VICINITY MAP
NTS

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsenger.com

PROFESSIONAL ENGINEER - STATE OF NEVADA
JAMES A. YANCEY
EXP. 06-30-18
CIVIL
NO. 016109
9/29/17

IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

COVER SHEET
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: N/A
SHEET NUMBER: C1.01
SHEET 1 OF 26

PROJ.#:124806 AGR:116099 QS:137-33-ME

1165276

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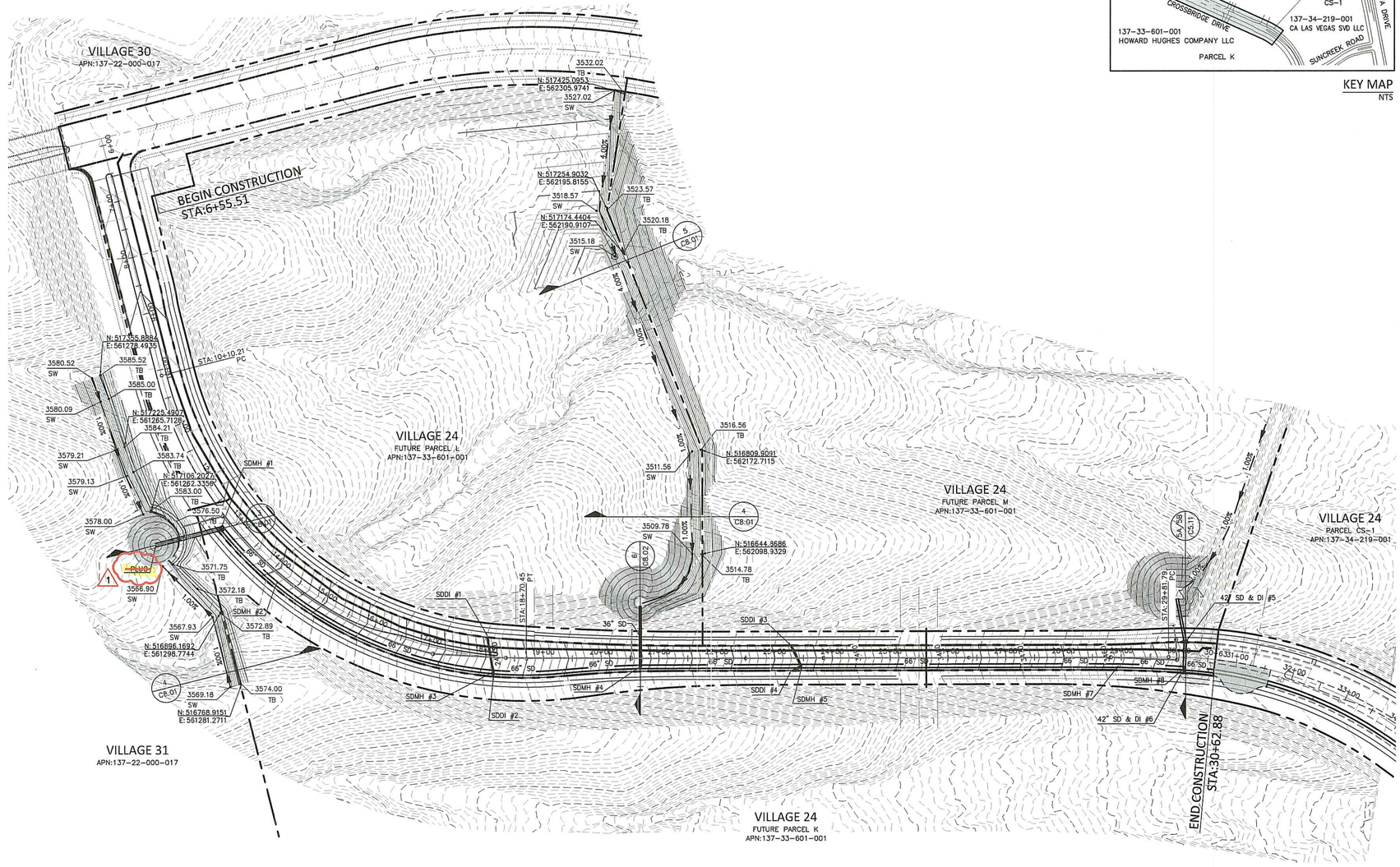

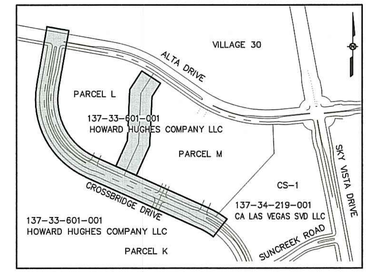

KEY MAP
NTS

GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #0368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS R DYSON
EXP 12/31/19
CIVIL
No. 11306
1/4/18
FOR ⚠1 ONLY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE. _____ PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511
CLARK COUNTY TRAFFIC MANAGEMENT
CALL 1-702-432-5300
FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED	
(0.00%)	0.00%	SLOPE
(0.00) XX	0.00 XX	ELEVATION TAG
Ⓓ	Ⓓ	STORM MANHOLE
		DROP INLET
--00--	--00--	CONTOUR
		RETAINING WALL
		SCREEN WALL

EXISTING	PROPOSED	
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SAWCUT LINE

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC APN: 137-33-601-001

MASTER GRADING PLAN

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION	DESIGN BY
⚠1	12/27/17	REMOVE SD PLUG	

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=100

SHEET NUMBER
C4.01
SHEET 4 OF 26

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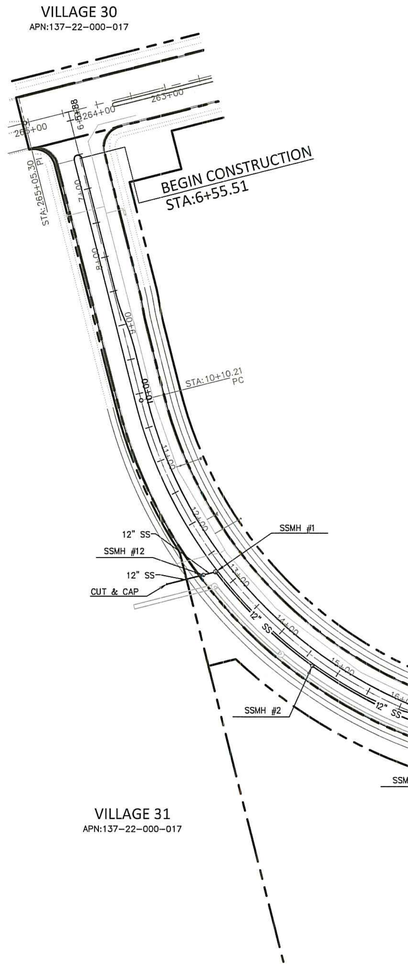
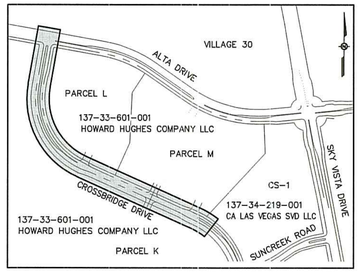
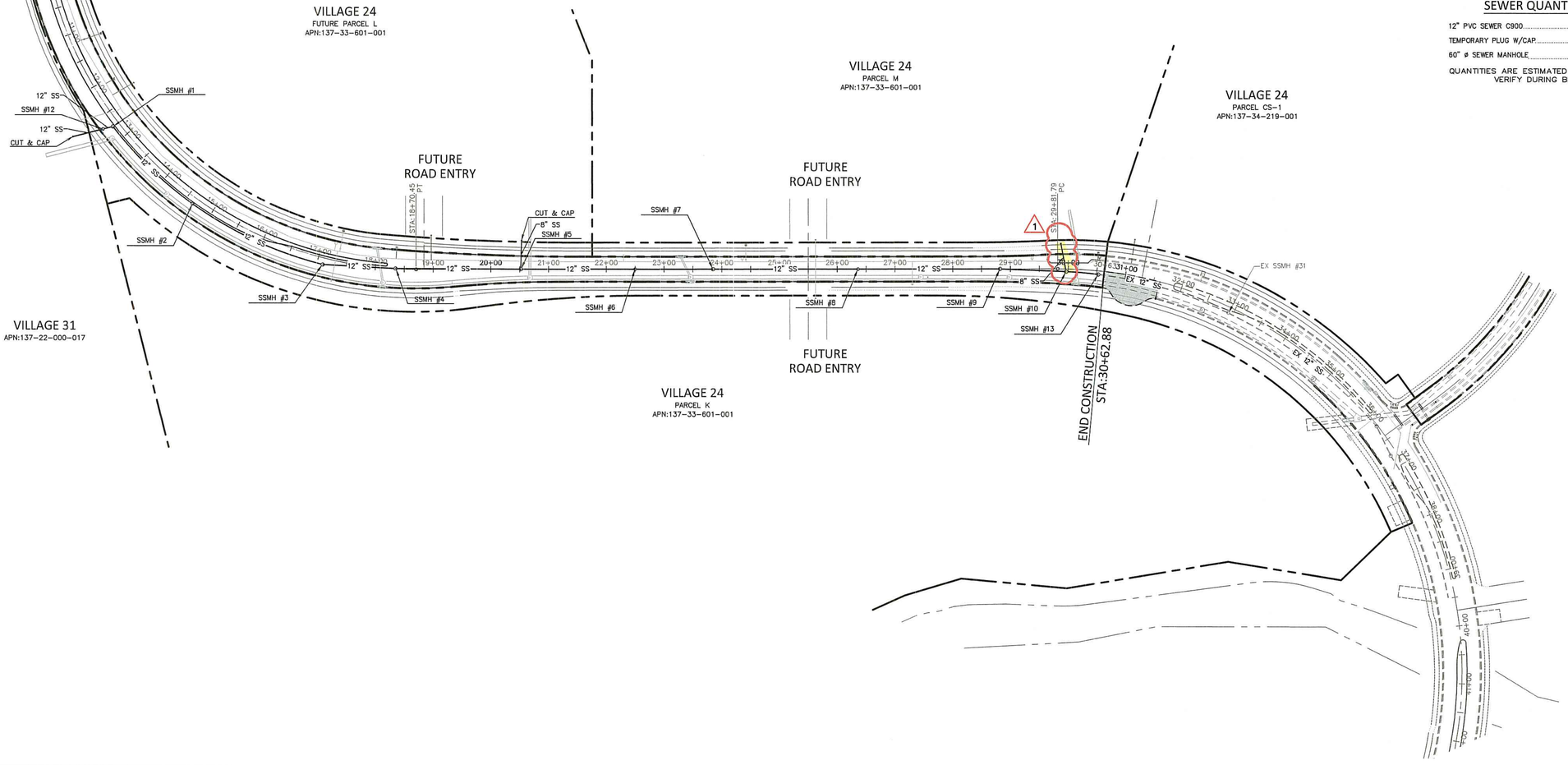




KEY MAP
NTS

SANITARY SEWER MANHOLE TABLE

SDMH#	STREET NAME	STATION & OFFSET	MH SIZE	PIPES IN:	PIPES OUT	RIM
1	CROSSBRIDGE DRIVE	12+75.00 11.50 R	5.00	12" PVC INV IN=3546.50	12" PVC INV OUT=3546.30	3564.40
2	CROSSBRIDGE DRIVE	14+64.14 11.50 R	5.00	12" PVC INV IN=3539.20	12" PVC INV OUT=3539.00	3557.08
3	CROSSBRIDGE DRIVE	17+10.00 11.50 R	5.00	12" PVC INV IN=3523.70	12" PVC INV OUT=3523.50	3541.13
4	CROSSBRIDGE DRIVE	18+35.01 -0.46 L	5.00	12" PVC INV IN=3515.50	12" PVC INV OUT=3515.30	3532.61
5	CROSSBRIDGE DRIVE	20+52.00 -0.18 L	5.00	12" PVC INV IN=3500.70 8" PVC INV IN=3501.03	12" PVC INV OUT=3500.50	3517.44
6	CROSSBRIDGE DRIVE	22+50.00 0.00	5.00	12" PVC INV IN=3486.00	12" PVC INV OUT=3485.80	3503.59
7	CROSSBRIDGE DRIVE	23+85.00 0.00	5.00	12" PVC INV IN=3477.20	12" PVC INV OUT=3477.00	3494.14
8	CROSSBRIDGE DRIVE	26+36.00 0.00	5.00	12" PVC INV IN=3460.90	12" PVC INV OUT=3460.70	3476.58
9	CROSSBRIDGE DRIVE	28+82.00 0.00	5.00	12" PVC INV IN=3447.07	12" PVC INV OUT=3446.80	3459.48
10	CROSSBRIDGE DRIVE	29+96.56 4.68 R	5.00	12" PVC INV IN=3445.65	12" PVC INV OUT=3445.45 8" PVC INV IN=3445.45	3453.44
12	CROSSBRIDGE DRIVE	12+68.17 28.06 R	5.00	12" PVC INV IN=3546.93	12" PVC INV OUT=3546.73	3564.24
13	CROSSBRIDGE DRIVE	30+52.84 6.28 R	5.00	12" PVC INV IN=3445.04	12" PVC INV OUT=3444.84	3451.45



GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 88°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

SEWER QUANTITIES (PUBLIC)

12" PVC SEWER C900	1806 LF
TEMPORARY PLUG W/CAP	3 EA
60" ø SEWER MANHOLE	12 EA

QUANTITIES ARE ESTIMATED ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11309
1/4/18
FOR 1 ONLY

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
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1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511
CALL 1-702-432-5300

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY.
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1-702-227-2929

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LEGEND

EXISTING	PROPOSED	
(0.00) XXX	0.00 XXX	ELEVATION TAG
		DRAIN INLET
		RETAINING WALL
		SCREEN WALL
		UTILITY POLE
		STREET LIGHT
		POWER LINE/POLE
		TELEPHONE LINE
		WATER LINE
		SANITARY SEWER LINE
		STORM SEWER LINE
		GAS LINE
		STORM MANHOLE
		FIRE HYDRANT
		FIRE DEPARTMENT CONNECTION
		WATER VALVE
		REDUCER
		SEWER MANHOLE
		CLEANOUT
		GAS VALVE
		PL-RIGHT-OF-WAY
		PL-ADJACENT
		CENTERLINE
		EASEMENT LINE
		FLOW LINE
		SIGN W/POLE
		SAWCUT LINE
		AREA LIGHT
		WATER METER
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
	BWV	BACK WATER VALVE

COLLINS ENGINEERS INC
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
SEWER MASTER PLAN
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION
1	12/27/17	REVISED SS LOCATION

DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=100
SHEET NUMBER C5.00
SHEET 5 OF 26

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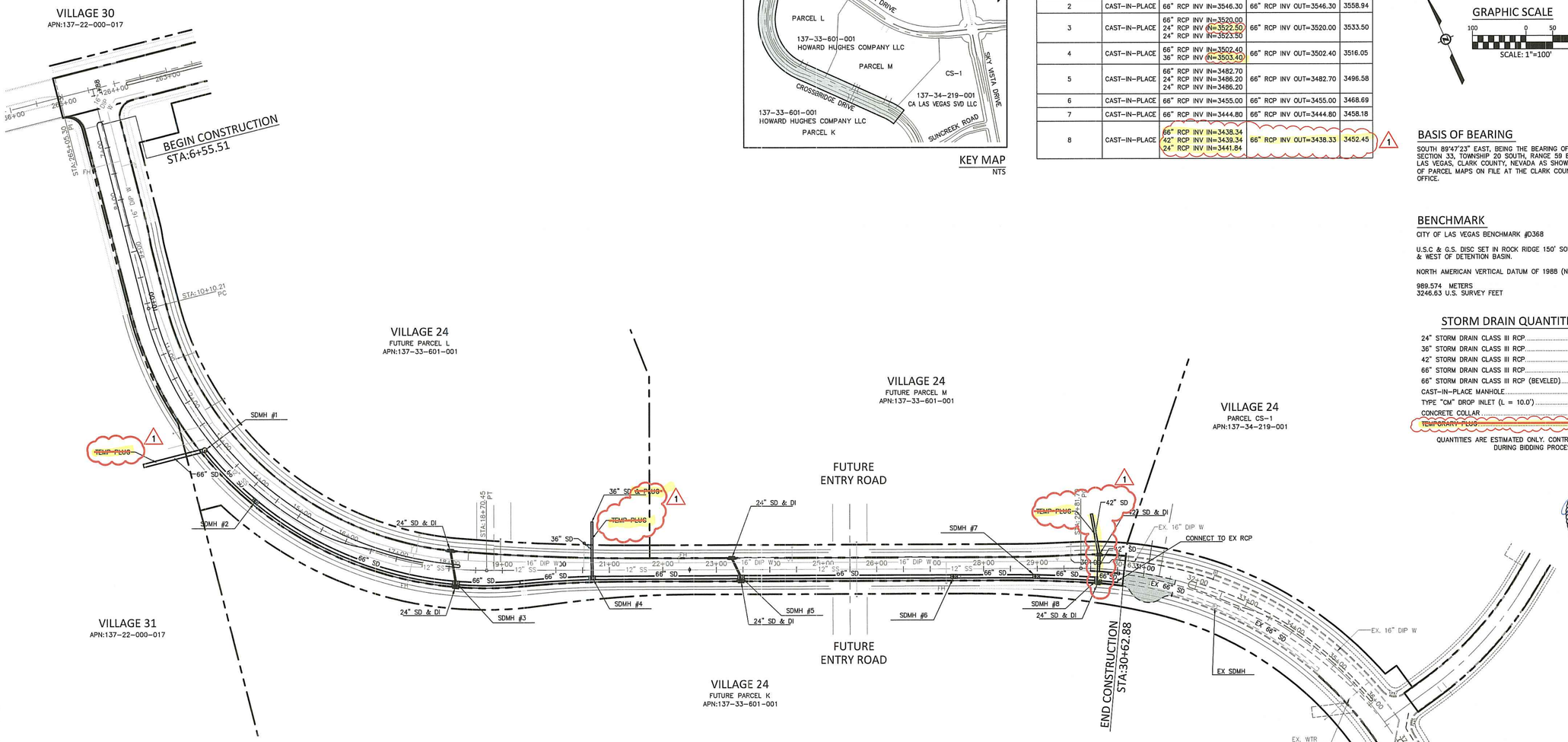

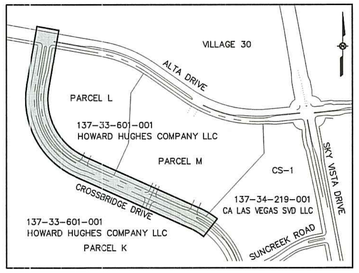

KEY MAP
NTS

STORM DRAIN MANHOLE TABLE

SDMH#	MH TYPE	PIPES IN:	PIPES OUT	RIM
1	CAST-IN-PLACE	66" RCP INV IN=3550.00	66" RCP INV OUT=3550.00	3563.72
2	CAST-IN-PLACE	66" RCP INV IN=3546.30	66" RCP INV OUT=3546.30	3558.94
3	CAST-IN-PLACE	66" RCP INV IN=3520.00 24" RCP INV IN=3522.50 24" RCP INV IN=3523.50	66" RCP INV OUT=3520.00	3533.50
4	CAST-IN-PLACE	66" RCP INV IN=3502.40 36" RCP INV IN=3503.40	66" RCP INV OUT=3502.40	3516.05
5	CAST-IN-PLACE	66" RCP INV IN=3482.70 24" RCP INV IN=3486.20 24" RCP INV IN=3486.20	66" RCP INV OUT=3482.70	3496.58
6	CAST-IN-PLACE	66" RCP INV IN=3455.00	66" RCP INV OUT=3455.00	3468.69
7	CAST-IN-PLACE	66" RCP INV IN=3444.80	66" RCP INV OUT=3444.80	3458.18
8	CAST-IN-PLACE	66" RCP INV IN=3438.34 42" RCP INV IN=3439.34 24" RCP INV IN=3441.84	66" RCP INV OUT=3438.33	3452.45

1

GRAPHIC SCALE
100 0 50 100
SCALE: 1"=100'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

STORM DRAIN QUANTITIES (PUBLIC)

24" STORM DRAIN CLASS III RCP	131	LF
36" STORM DRAIN CLASS III RCP	105	LF
42" STORM DRAIN CLASS III RCP	122	LF
66" STORM DRAIN CLASS III RCP	797	LF
66" STORM DRAIN CLASS III RCP (BEVELED)	1009	LF
CAST-IN-PLACE MANHOLE	8	EA
TYPE "CM" DROP INLET (L = 10.0')	6	EA
CONCRETE COLLAR	1	EA
TEMPORARY PLUG	3	EA

1

QUANTITIES ARE ESTIMATED ONLY. CONTRACTOR IS TO VERIFY DURING BIDDING PROCESS.

PROFESSIONAL ENGINEER STATE OF NEVADA
THOMAS P. DYSON
Exp 12/31/18
CIVIL
No. 11306
1/4/18
FOR 1 ONLY

CALL BEFORE YOU DIG
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811 or 1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511 (CLARK COUNTY TRAFFIC SIGNS/SIGNALS AND FREEWAY AND ARTERIAL STREET LIGHT SYSTEMS)
CALL 1-702-432-5300 (FREEWAY AND ARTERIAL STREET LIGHT SYSTEMS)

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED		EXISTING	PROPOSED		EXISTING	PROPOSED		EXISTING	PROPOSED	
(0.00) XXX	0.00 XXX	ELEVATION TAG	-E-	-E-	POWER LINE/POLE			FIRE HYDRANT			PL-RIGHT-OF-WAY
		DRAIN INLET	-T-	-T-	TELEPHONE LINE			FIRE DEPARTMENT CONNECTION			PL-ADJACENT
		RETAINING WALL	-W-	-W-	WATER LINE			WATER VALVE			CENTERLINE
		SCREEN WALL	-SS-	-SS-	SANITARY SEWER LINE			REDUCER			EASEMENT LINE
		UTILITY POLE	-D-	-D-	STORM SEWER LINE	S	S	SEWER MANHOLE			FLOW LINE
		STREET LIGHT	-G-	-G-	GAS LINE			CLEANOUT			SIGN W/POLE
				D	STORM MANHOLE			GAS VALVE			SAWCUT LINE
											AREA LIGHT
											WATER METER

EXISTING	PROPOSED	
		AC PAVEMENT
		6" TYPE "A" CURB
		24" TYPE "L" CURB & GUTTER
		30" ROLL CURB
	BWV	BACK WATER VALVE

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COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

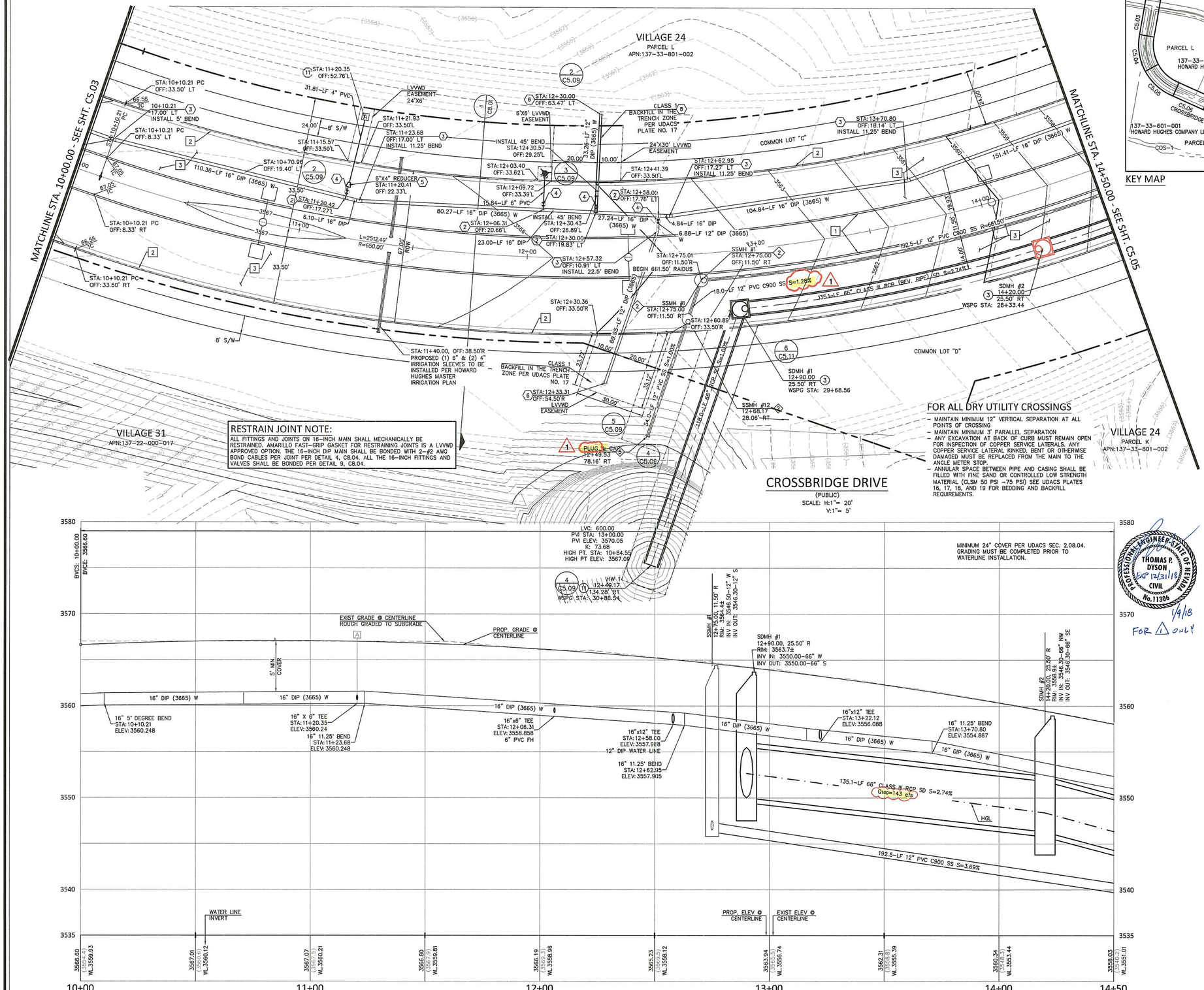
IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

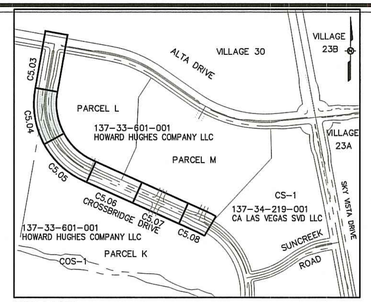
APN: 137-33-601-001

STORM DRAIN MASTER PLAN
SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		REVISED SD LOCATION

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	1"=100
SHEET NUMBER	C5.01
SHEET	6 OF 26





KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW–OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
3	INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST–IN–PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	CULVERT HEADWALL
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE
**	CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"–24")

DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH–ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: _____ PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS, INC.
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY PLAN & PROFILE

STA. 10+00.00 TO 14+50.00

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3

CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		REVISED SS INFO

CEI PROJECT: 9106

DESIGN BY: J. SALDIVAR

DRAWN BY: J. SALDIVAR

CHECKED BY: K. YAMADA

DATE: 04/2017

SCALE: 1" = 20'

SHEET NUMBER

C5.04

SHEET 9 OF 26

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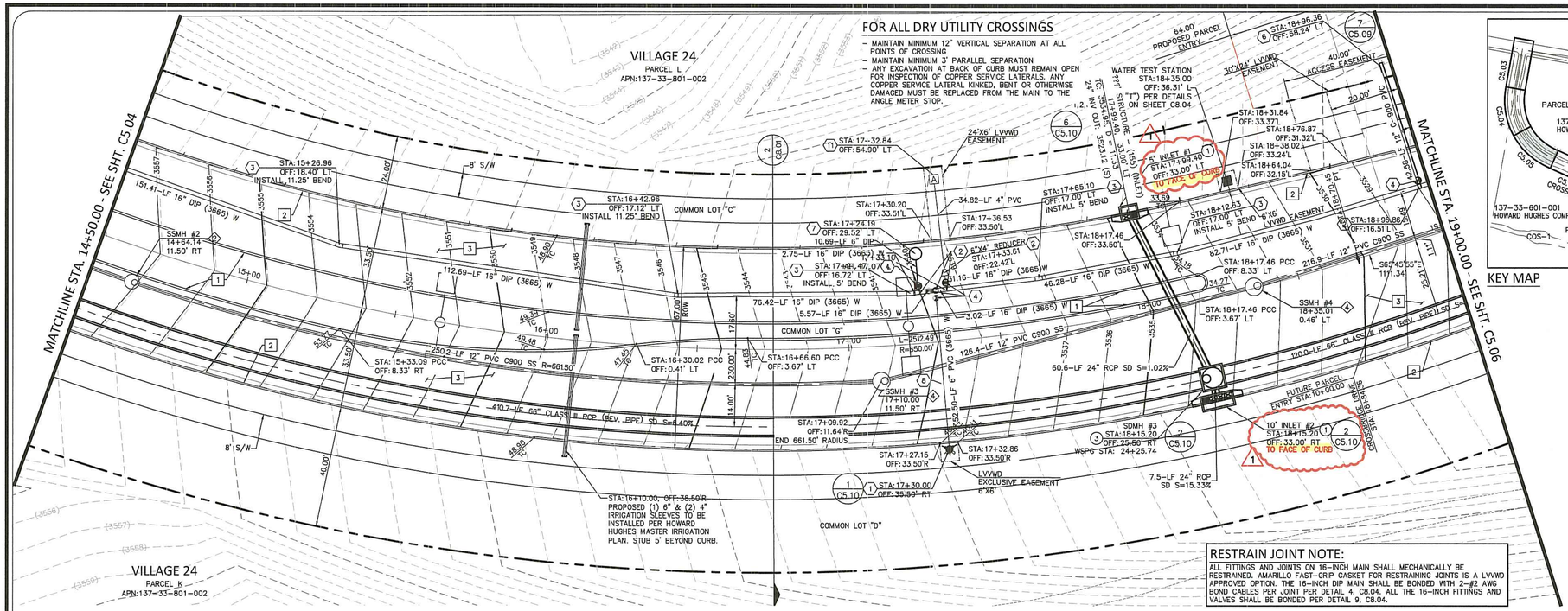

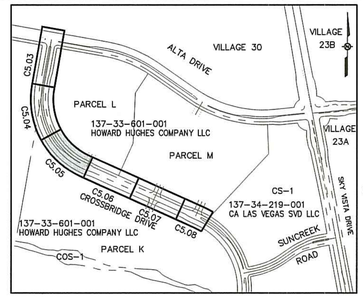

KEY MAP

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8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	CULVERT HEADWALL
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

** CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

RESTRAIN JOINT NOTE:

ALL FITTINGS AND JOINTS ON 16–INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST–GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16–INCH DIP MAIN SHALL BE BONDED WITH 2–#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16–INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

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APPROVED FOR CONSTRUCTION

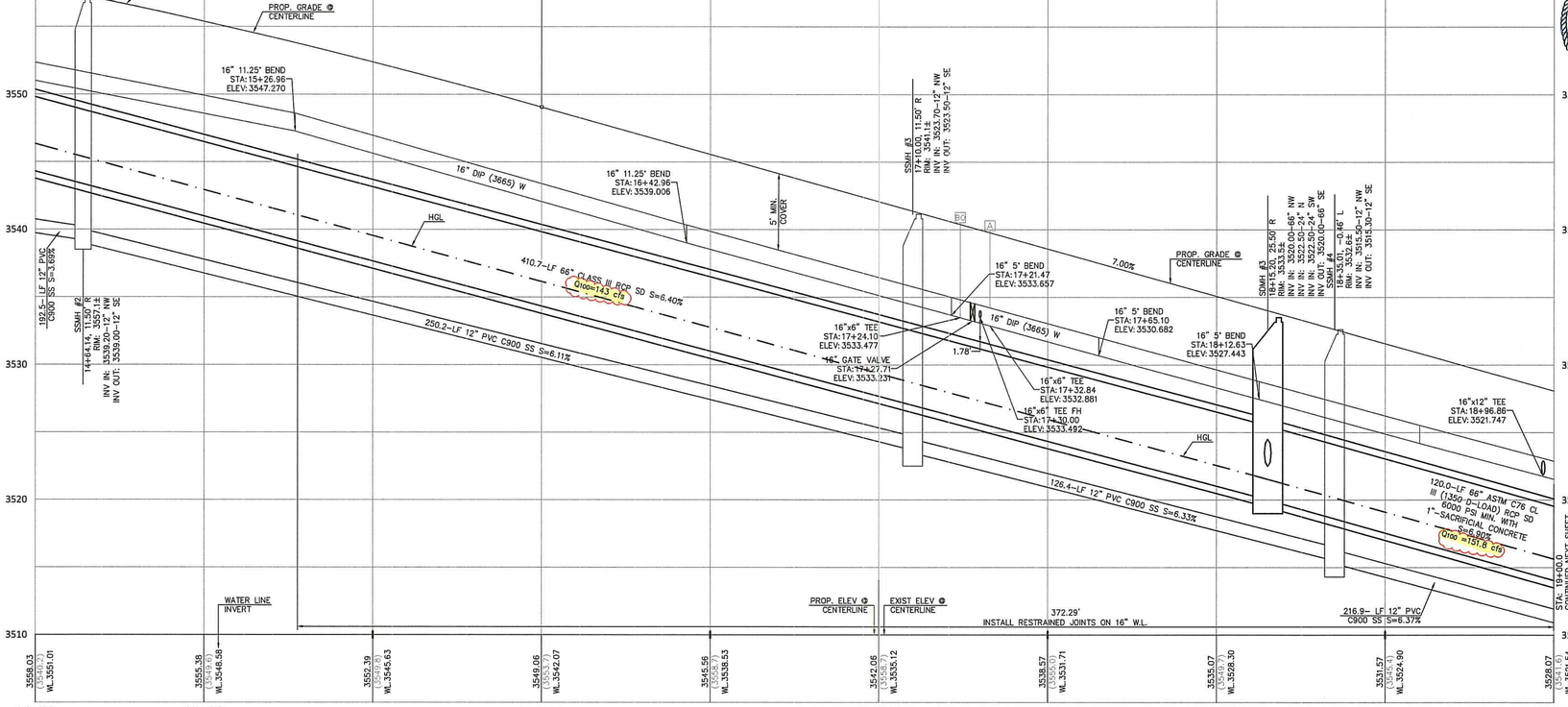
LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

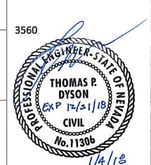
DATE. _____ PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

CROSSBRIDGE DRIVE

(PUBLIC)
SCALE: H:1"= 20'
V:1"= 5'





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APN: 137-33-601-001
UTILITY PLAN & PROFILE
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SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		ADDED SD INFO

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'
SHEET NUMBER C5.05
SHEET 10 OF 26

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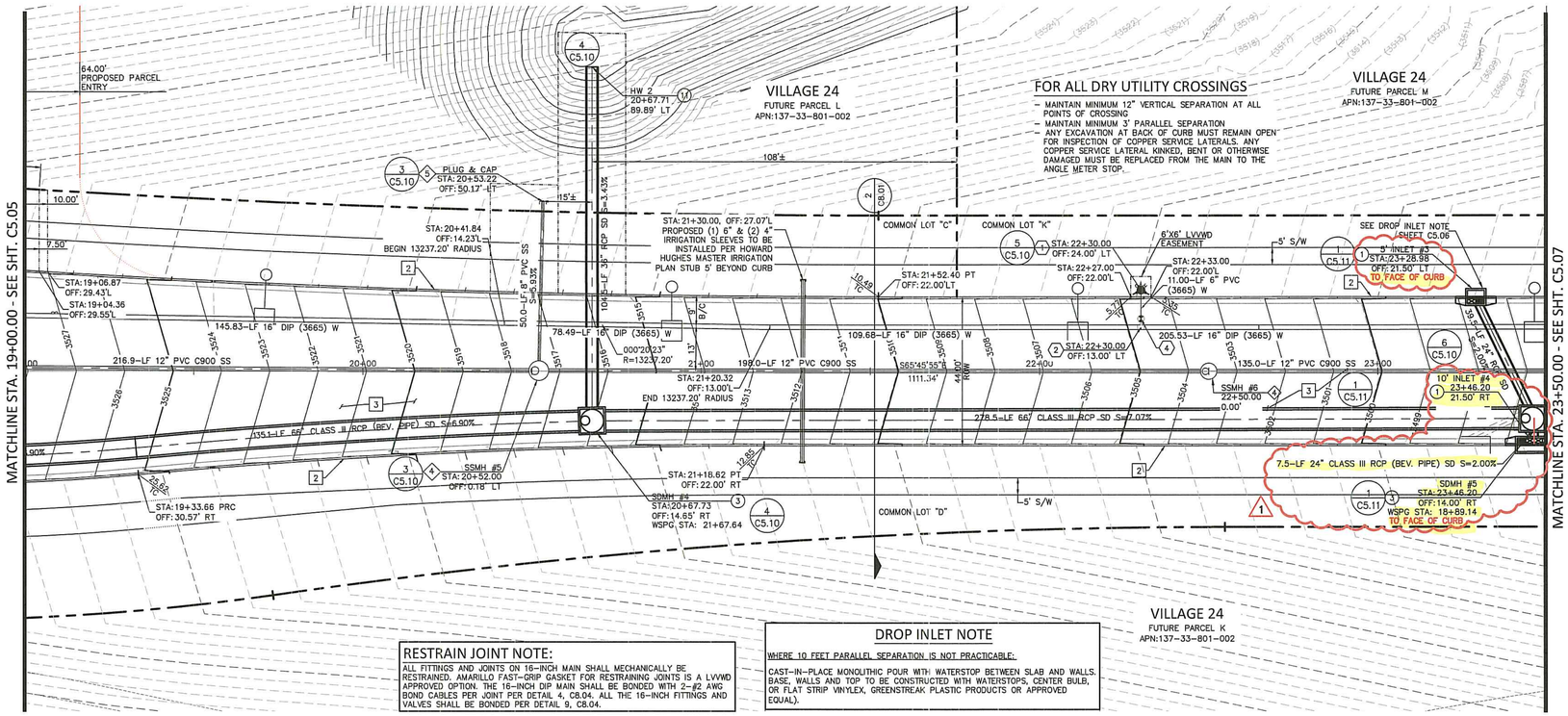

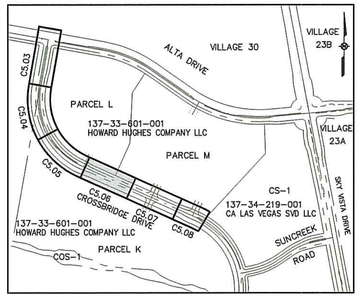

KEY MAP

GRAPHIC SCALE

20 0 10 20

SCALE: 1"=20'

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
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* SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
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4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
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6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST–IN–PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	CULVERT HEADWALL
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

ONE OR MORE SEGMENTS OF THE DOWNSTREAM SEWER SYSTEM THAT WILL SERVE THIS PROJECT HAS NOT BEEN COMPLETED AND OR ACCEPTED FOR MAINTENANCE BY THE CITY OF LAS VEGAS. ANY WORK DONE ON THIS PROJECT PRIOR TO THE COMPLETION AND OR ACCEPTANCE OF THE DOWNSTREAM SEWER SYSTEM(S) SHALL BE DONE AT THE DEVELOPER'S OWN RISK. THE CITY OF LAS VEGAS RESERVES THE RIGHT TO PREVENT THE PHYSICAL CONNECTION OF THIS PROJECT INTO THE DOWNSTREAM SEWER SYSTEM UNTIL ALL SEGMENTS HAVE BEEN COMPLETED AND ACCEPTED FOR MAINTENANCE OR UNTIL SUCH TIME AS THEY ARE DEEMED AVAILABLE FOR SERVICE.

WATER MAIN JOINT DEFLECTION (DIP, 14"–24")

DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH–ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE. _____ PROJECT NO: 124806

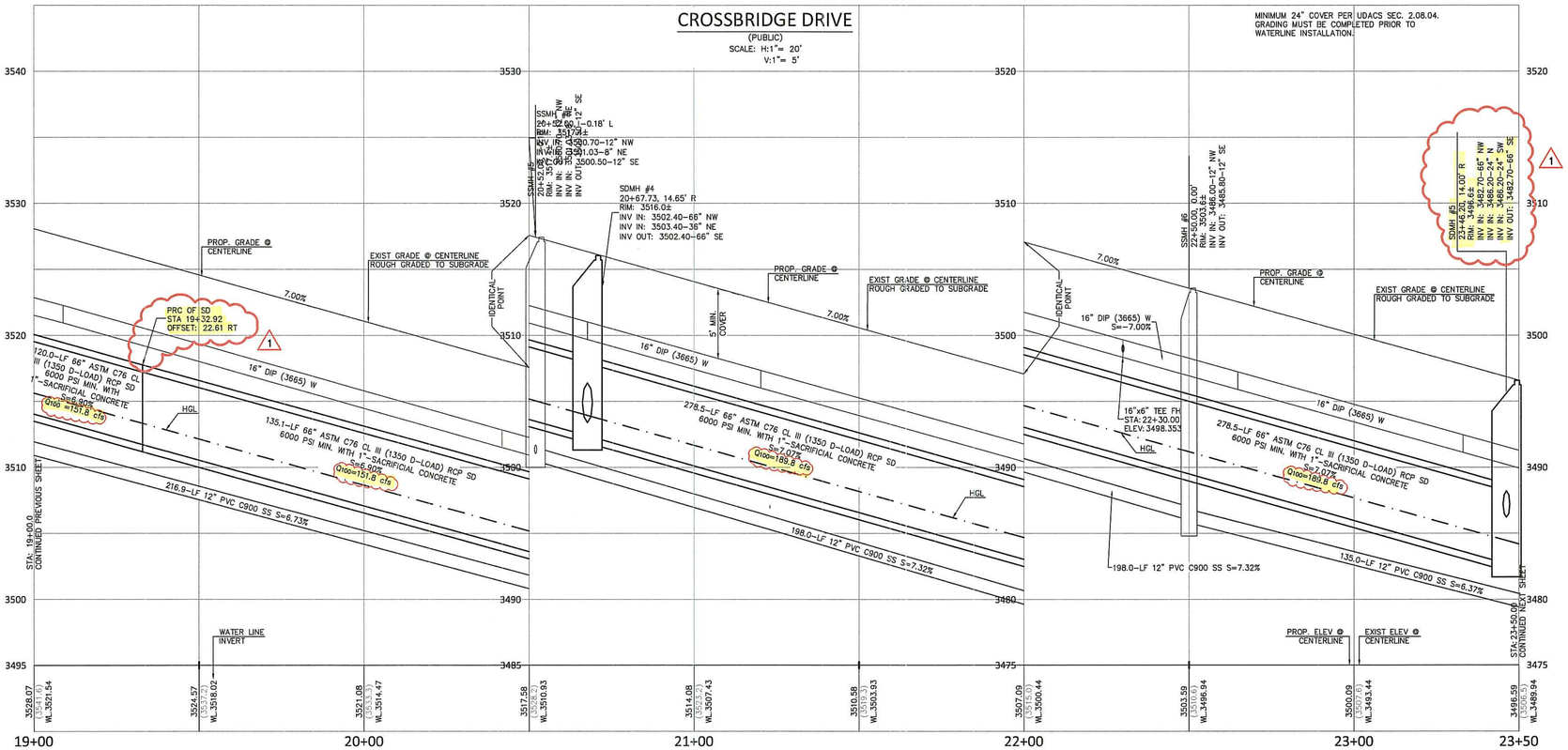
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

CROSSBRIDGE DRIVE

(PUBLIC)

SCALE: H:1"= 20'
V:1"= 5'

MINIMUM 24" COVER PER UDACS SEC. 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.



| | | |

MATCHLINE STA. 23+50.00 - SEE SHT. C5.06

MATCHLINE STA. 28+00.00 - SEE SHT. C5.08

FUTURE PARCEL ENTRY

64.00' PROPOSED PARCEL ENTRY

VILLAGE 24
PARCEL M
APN:137-33-801-002

40.00' ACCESS EASEMENT

30'X24' LVVWD EASEMENT

STA: 25+62.50 OFF: 52.02' LT

STA: 24+41.82 OFF: 43.56' LT

STA: 24+44.82 OFF: 46.06' LT

LVVWD EASEMENT 24'X6'

5' S/W

6"X4" REDUCER STA:24+41.80 OFF:17.61' LT

STA: 24+38.82 OFF: 22.06'LT

26.77–LF 4" PVC

STA: 24+35.53 OFF:13.02' LT

STA: 24+44.82 OFF: 22.06' LT

STA: 25+30.03 OFF: 22.00' LT

STA: 25+42.49 OFF: 22.00' LT

STA: 25+70.03 OFF: 22.00' LT

STA: 25+72.49 OFF: 22.00' LT

COMMON LOT "K"

27+30.00 12.92' LT

205.53–LF 16" DIP (3665) W

5.0 LF 6" DIP

3.06–LF 16" DIP

120.68–LF 16" DIP (3665) W

251.0–LF 12" PVC C900 SS

38.02–LF 12" C–900 PVC

16"X12" CROSS STA: 25+62.50 ELEV: 3474.03

167.50–LF 16" DIP (3665) W

146.00–LF 16" DIP (3665) W

S65°45'55"E 1111.34'

44.00' ROW

198.6–LF 66" CLASS III RCP SD S=6.95%

246.0–LF 12" PVC C900 SS

STA: 27+33.00 OFF: 22.00'R

STA: 27+27.00 OFF: 22.00'R

8'X6' LVVWD EASEMENT

SDMH #6 27+44.84 14.00' RT

STA: 25+72.49 OFF: 22.00' RT

STA: 25+70.06 OFF: 22.00' RT

SSMH #8 26+36.00 0.00'

STA: 25+30.06 OFF: 22.01' RT

STA: 25+42.49 OFF: 22.00' RT

40.00' ACCESS EASEMENT

STA: 25+62.50 OFF: 51.00' RT

64.00' PROPOSED PARCEL ENTRY

FUTURE PARCEL ENTRY STA:10+00.00

CROSSBRIDGE DRIVE STA: 23+50.00

SSMH #7 23+85.00 0.00'

COMMON LOT "D"

STA: 27+30.00 OFF: 27.00' RT

VILLAGE 24
PARCEL K
APN:137-33-801-002

THIS PROPERTY MAY HAVE STATIC WATER PRESSURE IN EXCESS OF 80 PSI. THE UNIFORM PLUMBING CODE REQUIRES THAT INDIVIDUAL, ON–SITE (PRIVATE), PRESSURE REDUCING VALVES BE INSTALLED WHENEVER THE PRESSURE EXCEEDS 80 PSI. PRV'S ARE THE DEVELOPER'S RESPONSIBILITY, AND WILL NOT BE INSPECTED OR INCLUDED IN THE ACCEPTANCE OF LVVWD FACILITIES.

RESTRAIN JOINT NOTE:
ALL FITTINGS AND JOINTS ON 16–INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST–GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16–INCH DIP MAIN SHALL BE BONDED WITH 2–#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16–INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

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

CROSSBRIDGE DRIVE

(PUBLIC)
SCALE: H:1"= 20'
V:1"= 5'

MINIMUM 24" COVER PER UDACS SEC. 2.08.04. GRADING MUST BE COMPLETED PRIOR TO WATERLINE INSTALLATION.

SSMH #7 23+85.00, 0.00' RIM: 3497.34 INV IN: 3477.20–12" NW INV OUT: 3477.00–12" SE

SSMH #8 26+36.00, 0.00' RIM: 3496.75 INV IN: 3461.08–12" NW INV OUT: 3460.76–12" SE

SSMH #6 27+44.84, 14.00' R RIM: 3488.75 INV IN: 3455.00–66" NW INV OUT: 3455.00–66" SE

5' MIN. COVER

7.00%

PROP. GRADE @ CENTERLINE

EXIST GRADE @ CENTERLINE ROUGH GRADED TO SUBGRADE

16"x6" TEE STA: 24+35.53 ELEV: 3483.958

16" GATE VALVE STA: 24+38.76 ELEV: 3483.733

16"x6" TEE STA: 24+41.82 ELEV: 3483.518

16"x6" TEE STA: 23+61.24 ELEV: 3490.489

16" DIP (3665) W

HGL

398.6–LF 66" ASTM C76 CL III (1350 D–LOAD) RCP SD 6000 PSI MIN. WITH 1"–SACRIFICIAL CONCRETE S=6.95% Qhdc=200 cfs

135.0 – LF 12" PVC C900 SS S=6.37%

251.0–LF 12" PVC Pipe C900 SS S=6.41%

STA: 23+50.00 CONTINUED PREVIOUS SHEET

268.40' INSTALL RESTRAINED JOINTS ON 16" W.L.

WATER LINE INVERT

IDENTICAL POINT

16"X12" CROSS STA: 25+74.50 ELEV: 3474.403 12" PVC W/L

1.5'

STA: 26+18.40

16"x6" TEE STA: 27+30.00 ELEV: 3463.358

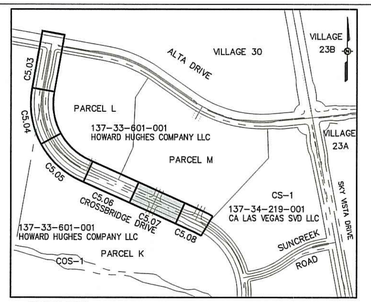
1.77'

246.0–LF 12" PVC C900 SS S=5.46%

PROP. ELEV @ CENTERLINE

EXIST ELEV @ CENTERLINE

3498.59 (3506.5) WL:3489.94	3493.09 (3501.4) WL:3486.44	3489.60 (3501.4) WL:3482.95	3486.10 (3494.0) WL:3479.45	3482.60 (3494.0) WL:3475.95	3479.10 (3487.7) WL:3472.45	3475.60 (3487.7) WL:3468.96	3472.11 (3480.1) WL:3465.46	3468.61 (3480.1) WL:3461.96	3465.11 (3469.3) WL:3458.49				
23+50	24+00	25+00	26+00	27+00	28+00								



KEY MAP

GRAPHIC SCALE
20 0 10 20
SCALE: 1"=20'

THOMAS P. DYSON EXP 12/31/18 CIVIL No.11306 PROFESSIONAL ENGINEER STATE OF NEVADA
1/4/18
FOR ⚠ ONLY

CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
2	INSTALL "L" TYPE CURB & GUTTER PER USD DWG NO. 216
3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
5	INSTALL REDUCER PER UDACS PLT. NO. 30 (*)
6	INSTALL CAP W/ 2" BLOW–OFF ASSY PER UDACS PLT. NO. 36 (*)
7	INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
8	CLSM CLASS 1 BACKFILL IN THE TRENCH ZONE PER UDACS PLATE NO. 17 & 19
9	INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (WITH RESTRAINED JOINTS)
10	REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11	INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
12	INSTALL 1 1/2" METER & RPPA PER UDACS PLT. NO. 4 & 8 & DETAIL SHEET C5.02 (BRASS BETWEEN METER & RPPA)
13	INSTALL CROSS PER UDACS PLT. NO. 31 (*)
*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
3	INSTALL 48" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
4	INSTALL 60" SEWER MANHOLE W/CORROSION PROTECTION WITH SINGLE LID
5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST–IN–PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	CULVERT HEADWALL
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE
**	CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:
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WATER MAIN JOINT DEFLECTION (DIP, 14"–24")
DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH–ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE. _____ PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001
UTILITY PLAN & PROFILE
STA. 23+50.00 TO 28+00.00
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION
1	12/27/17	REVISED SS INFO

DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1" = 20'

SHEET NUMBER
C5.07
SHEET 12 OF 26

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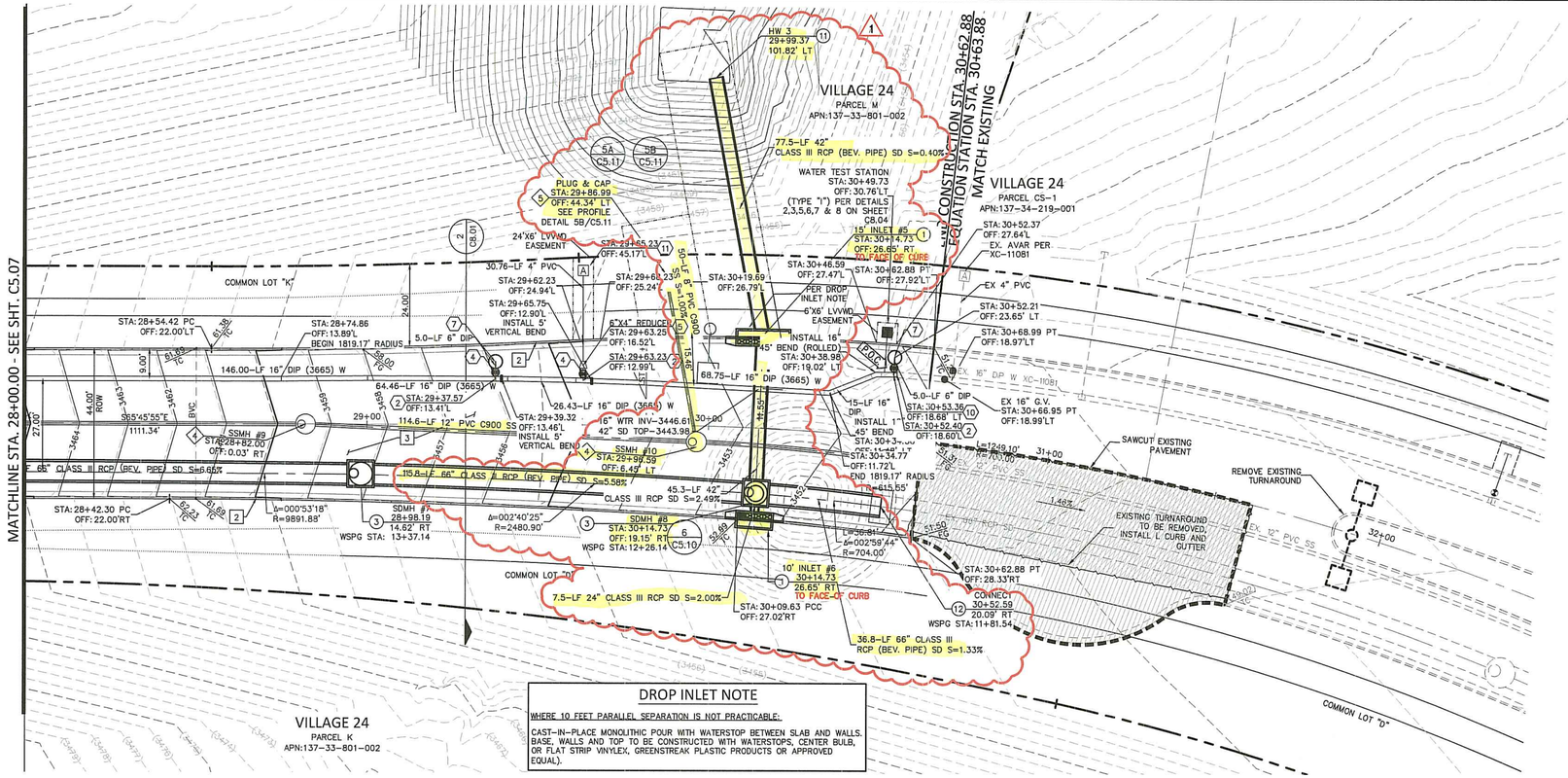
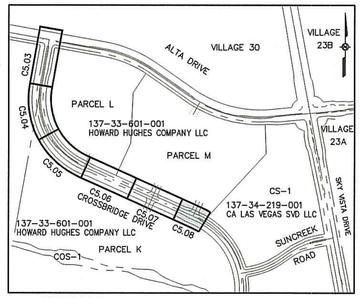


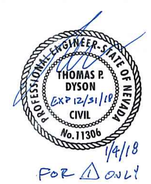


KEY MAP

GRAPHIC SCALE

20 0 10 20

SCALE: 1"=20'



CONSTRUCTION NOTES:

NO.	ITEM: USDCCA: UNIFORM STANDARD DRAWINGS CLARK COUNTY AREA
1	INSTALL "A" TYPE ISLAND CURB PER USD DWG NO. 219
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3	INSTALL A.C. PAVEMENT PER TYPICAL STREET SECTION DETAILS
4	INSTALL HANDICAP RAMP CURB DEPRESSION (BY OTHERS)
5	VERIFY LOCATION AND ELEVATION OF EXISTING IMPROVEMENT. IF DISCREPANCY EXISTS, NOTIFY ENGINEER PRIOR TO CONSTRUCTION

WATER CONSTRUCTION NOTES: 16" WATER MAIN WITH RESTRAINED JOINTS (*)

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL FIRE HYDRANT & ASSEMBLY (TEE & 6" GV) PER UDACS PLT. NO. 40 OR 41
2	INSTALL TEE PER UDACS PLT. NO. 31 (*)
3	INSTALL BEND PER UDACS PLT. NO. 31. (SEE PLAN FOR ∠) (*)
4	INSTALL GATE VALVE PER UDACS PLT. NO. 30 AND 39 (*)
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*	SEE PLANS AND NOTE ATTACHED PIPE SIZE FOR TEE, BEND, GATE VALVE, REDUCER AND CAP SIZES

SEWER CONSTRUCTION NOTES:

NO.	ITEM: DCSWCS DESIGN AND CONSTRUCTION STANDARDS FOR WASTEWATER COLLECTION SYSTEMS
1	INSTALL 48" SEWER MANHOLE WITH SINGLE LID
2	INSTALL 60" SEWER MANHOLE WITH SINGLE LID
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5	INSTALL TEMPORARY PLUG AND CAP SEWER STUB
6	INSTALL ELASTOMERIC JOINT SEALANT AT ALL MANHOLE JOINTS PER DCSWCS 4.9.7
7	REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE

STORM DRAIN CONSTRUCTION NOTES:

NO.	ITEM: UDACS: PLATE NO. PER UNIFORM DESIGN AND CONSTRUCTION STANDARD FOR WATER DISTRIBUTION SYSTEMS.
1	INSTALL TYPE 2 MODIFIED "CM2" DROP INLET PER USDCCA DWG. NO. 412.1 AND 421
2	NOT USED
3	INSTALL CAST-IN-PLACE MANHOLE PER DETAIL 7 SHEET C8.02
4	INSTALL JUNCTION STRUCTURE
5	INSTALL PRECAST MANHOLE TEE W/ 48" RISER
6	INSTALL PRECAST MANHOLE TEE W/ 60" RISER
7	INSTALL PRECAST ELBOW (SEE PLAN FOR ∠)
8	INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
9	NOT USED
10	INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
11	CULVERT HEADWALL
12	REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

**CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

SEWER CONNECTION NOTE:

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WATER MAIN JOINT DEFLECTION (DIP, 14"-24")

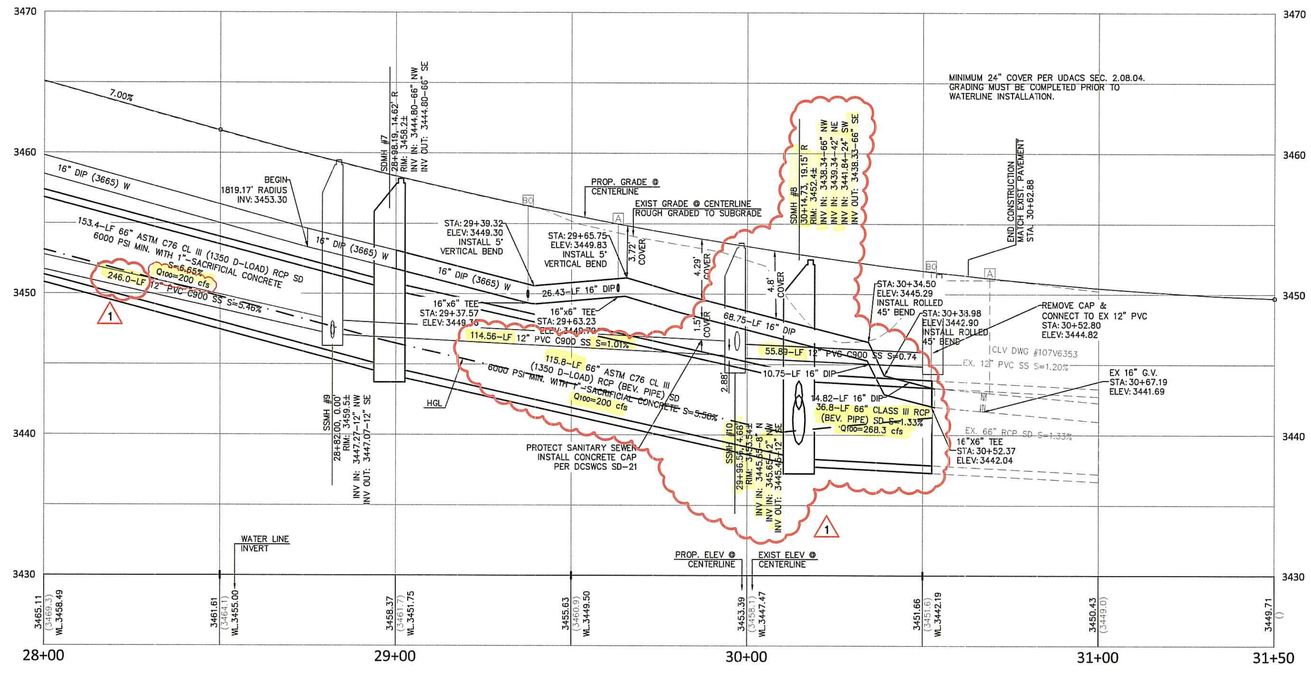
DIP PIPE SHALL BE DEFLECTED AT JOINT ONLY. FOR PUSH-ON AND MECHANICAL TYPE DIP JOINTS, MAXIMUM DEFLECTION SHALL BE (1.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 690 FEET FOR 18 FEET OF PIPE LENGTHS AND 765 FEET FOR 20 FEET PIPE LENGTHS, PER UDACS 2.07.03. FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE: _____ PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1500 GPM AT 20 PSI RESIDUAL



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RESTRAIN JOINT NOTE:

ALL FITTINGS AND JOINTS ON 16-INCH MAIN SHALL MECHANICALLY BE RESTRAINED. AMARILLO FAST-GRIP GASKET FOR RESTRAINING JOINTS IS A LVVWD APPROVED OPTION. THE 16-INCH DIP MAIN SHALL BE BONDED WITH 2-#2 AWG BOND CABLES PER JOINT PER DETAIL 4, C8.04. ALL THE 16-INCH FITTINGS AND VALVES SHALL BE BONDED PER DETAIL 9, C8.04.

FOR ALL DRY UTILITY CROSSINGS

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

COLLINS ENGINEERS
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PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY PLAN & PROFILE

STA. 28+00.00 TO 30+63.00

SUMMERLIN VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 3

CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		REVISED SS & SD LOCATION

CEI PROJECT: 9106

DESIGN BY: J. SALDIVAR

DRAWN BY: J. SALDIVAR

CHECKED BY: K. YAMADA

DATE: 04/2017

SCALE: 1" = 20'

SHEET NUMBER C5.08

SHEET 13 OF 26

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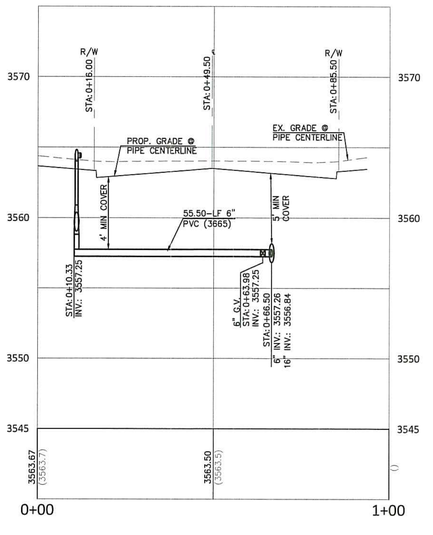
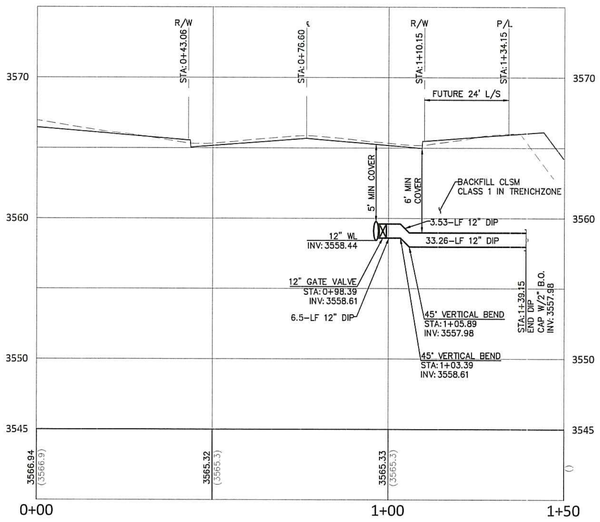


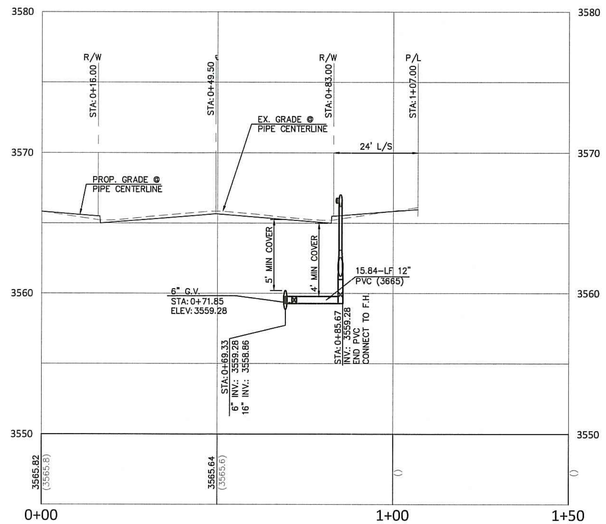
1 C5.09 F.H. LATERAL - STA: 7+30.00 (REF. SHEET C5.03)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



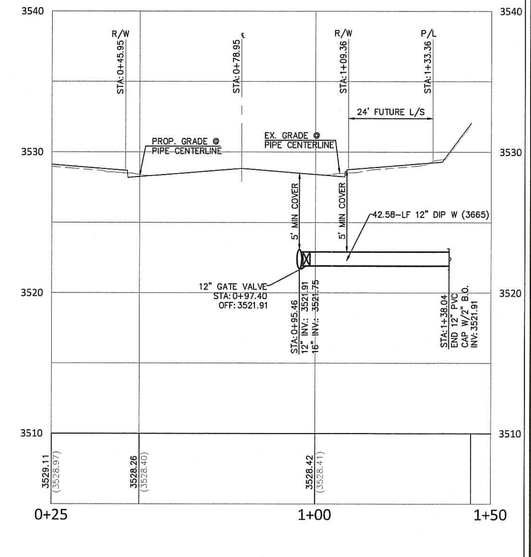
2 C5.09 12" WATER LATERAL - STA: 12+30.00 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



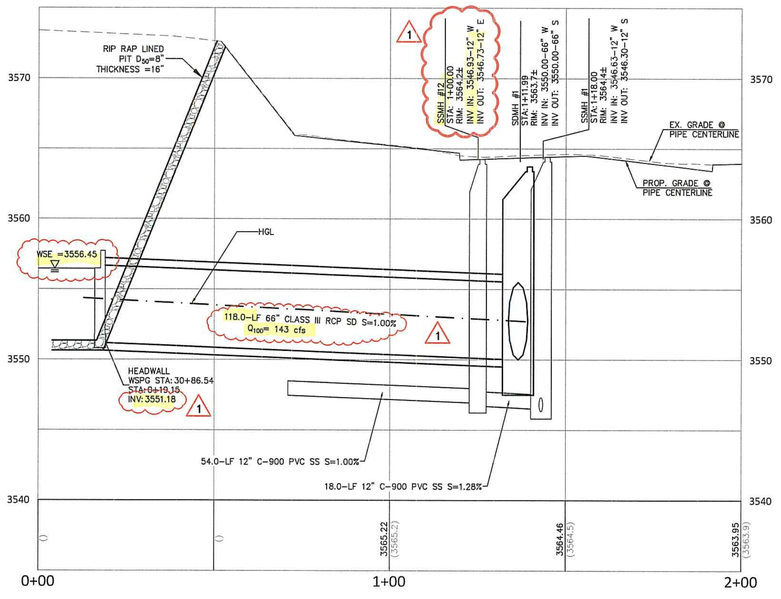
3 C5.09 F.H. LATERAL - STA: 12+06.31 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



7 C5.09 12" WATER LATERAL - STA: 18+96.38 (REF. SHEET C5.05)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



4 C5.09 SSMH #1 - STA: 12+75.00 (REF. SHEET C5.04)

PROFILE VIEW
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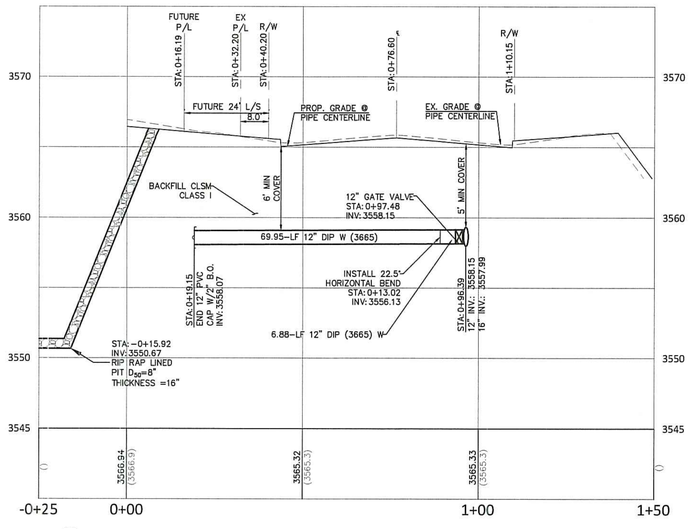
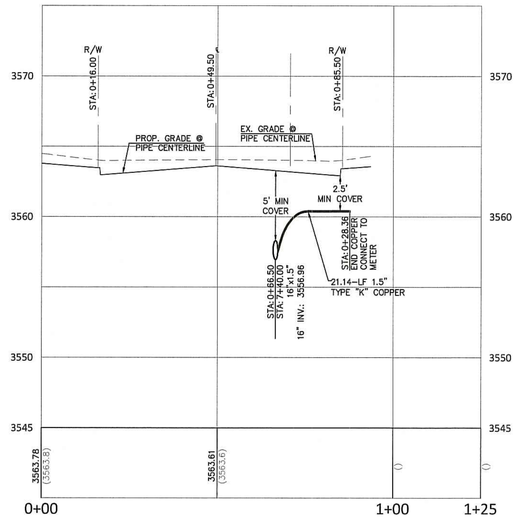
V: 1"=5'



5 C5.09 12" WATER LATERAL - STA: 12+58.00 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



6 C5.09 TYPE "K" COPPER - STA: 7+40.00 (REF. SHEET C5.03)

PROFILE VIEW
H: 1"=20'
V: 1"=5'

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11306

1/4/18
FOR 1 ONLY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE. _____ PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST–IN–PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

UTILITY LATERALS 1

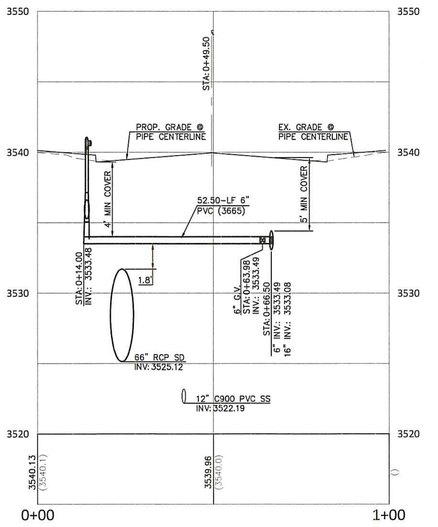
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
1	12/27/17		REVISED SD & SS INFO

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C5.09
SHEET 14 OF 26

F:\PROJECTS\600\62024-223\DWG\PRODUCTION\9106-C5.09-SDLATS.DWG 01/03/2018 03:15:20 PM



1 / C5.10 — F.H. LATERAL - STA: 17+30.00 (REF. SHEET C5.05) — PROFILE VIEW
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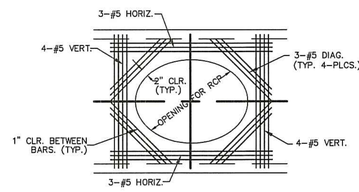
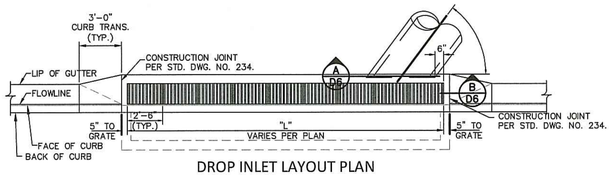
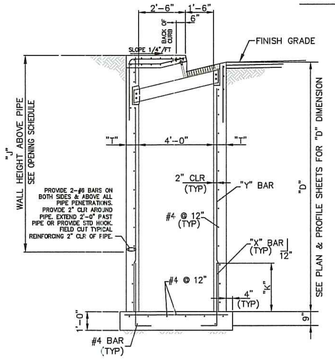
V: 1"=5'



SECTION "A"

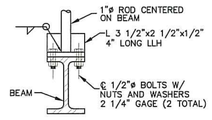


DROP INLET LAYOUT PLAN

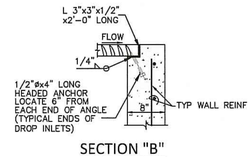


DIMENSIONS			"X" BARS	"Y" BARS
"D"	"T"	"K"		
D ≤ 7'-0"	8"	2'-0"	#4 @ 12"	#4 @ 12"
7'-0" < D ≤ 9'-0"	8"	2'-6"	#5 @ 12"	#5 @ 12"
9'-0" < D ≤ 10'-6"	8"	2'-6"	#5 @ 6"	#5 @ 8"
10'-6" < D ≤ 13'-3"	10"	2'-6"	#5 @ 4"	#5 @ 4"
13'-3" < D ≤ 14'-6"	12"	3'-0"	#6 @ 4"	#6 @ 4"

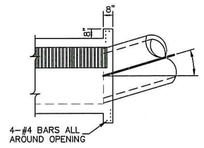
TYPICAL CATCH BASIN SECTION
NOT TO SCALE



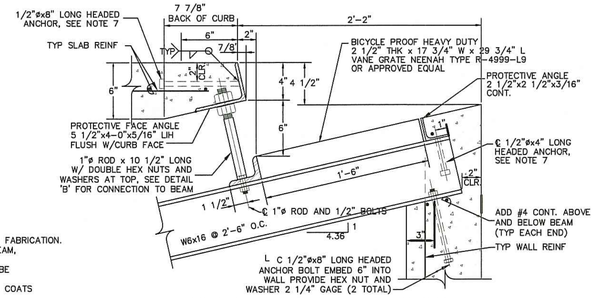
DETAIL "B"



SECTION "B"



ALTERNATE CONNECTION DETAIL

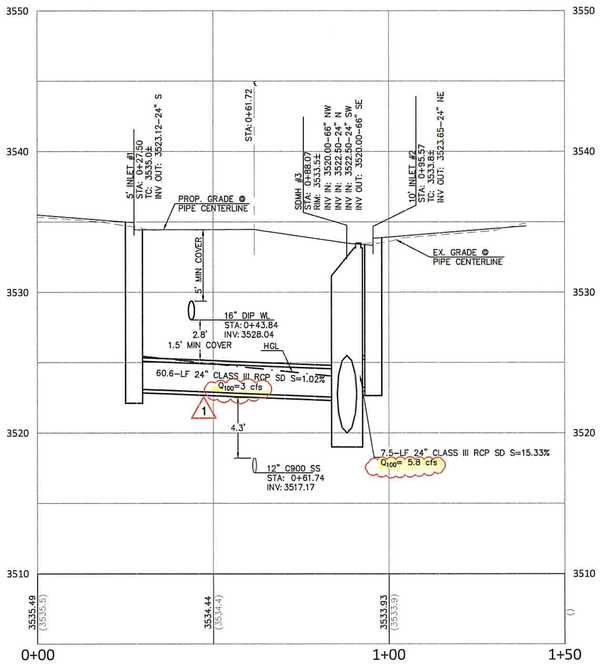


PROTECTIVE FACE & ROD - DETAIL "A"

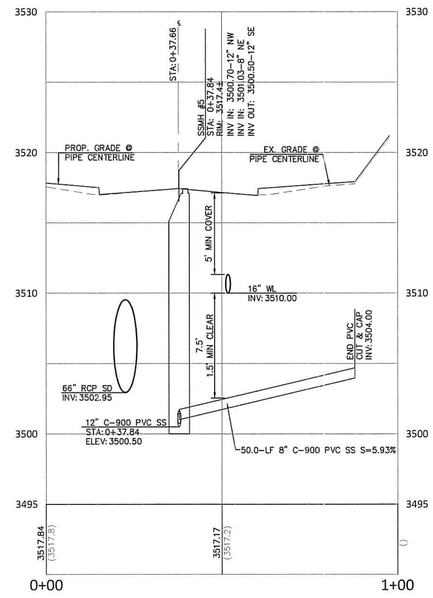
NOTES:

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

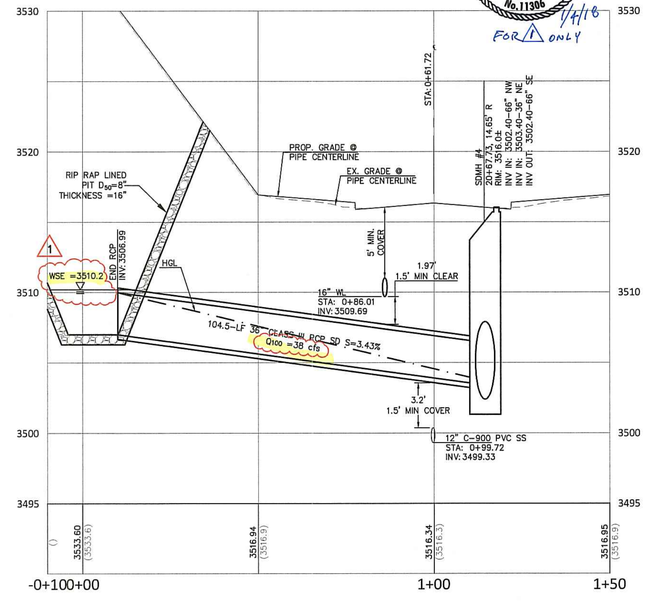
6 / C5.10 — DROP INLET DETAIL — NTS



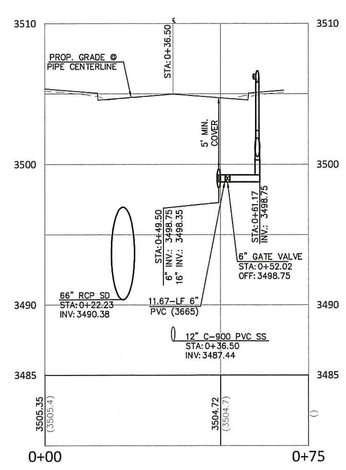
2 / C5.10 — SDMH #3 - STA: 18+15.20 (REF. SHEET C5.05) — PROFILE VIEW
H: 1"=20'
V: 1"=5'



3 / C5.10 — SSMH #5 - STA:20+52.00 (REF. SHEET C5.06) — PROFILE VIEW
H: 1"=20'
V: 1"=5'



4 / C5.10 — SDMH #4 - STA:20+67.73 (REF. SHEET C5.06) — PROFILE VIEW
H: 1"=20'
V: 1"=5'



5 / C5.10 — F.H. LATERAL - STA:22+30.00 (REF. SHEET C5.04) — PROFILE VIEW
H: 1"=20'
V: 1"=5'

DROP INLET NOTE
WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST-IN-PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE _____ PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

PROFESSIONAL ENGINEER - STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11305
1/4/18
FOR 1 ONLY

COLLINS ENGINEERS
3130 S. DURANGO DR. SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
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IMPROVEMENT PLANS FOR
THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
UTILITY LATERALS 2
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION
1	12/27/17	REVISED SD INFO

DESIGN BY

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C5.10
SHEET 15 OF 26

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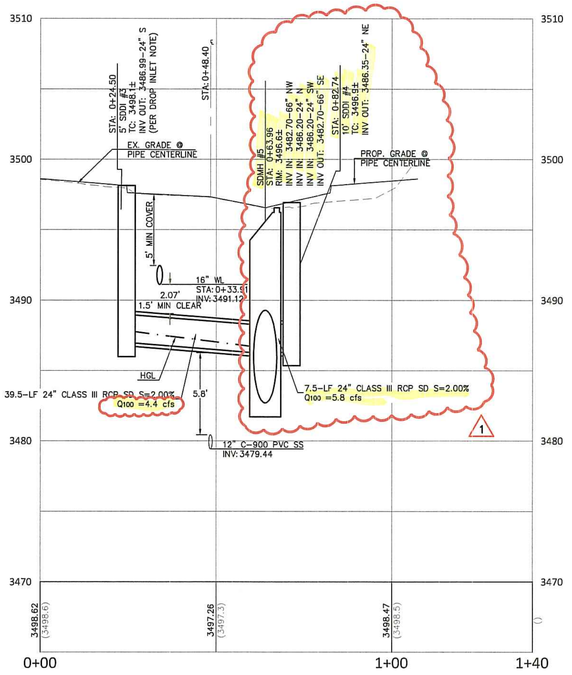
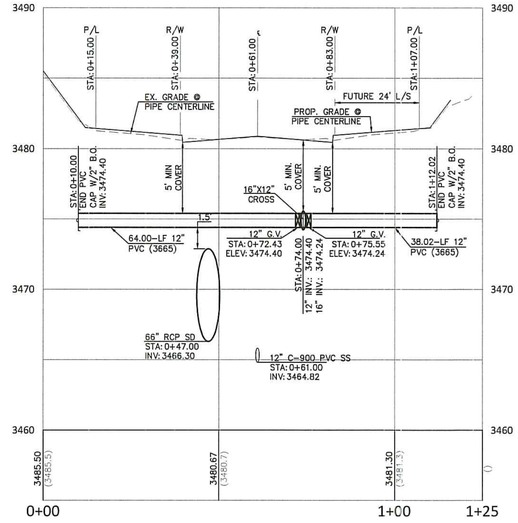


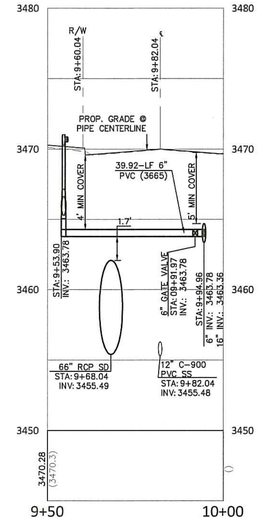
1 / C5.11 — SDMH #5 - STA:23+46.20 (REF. SHEET C8.03)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



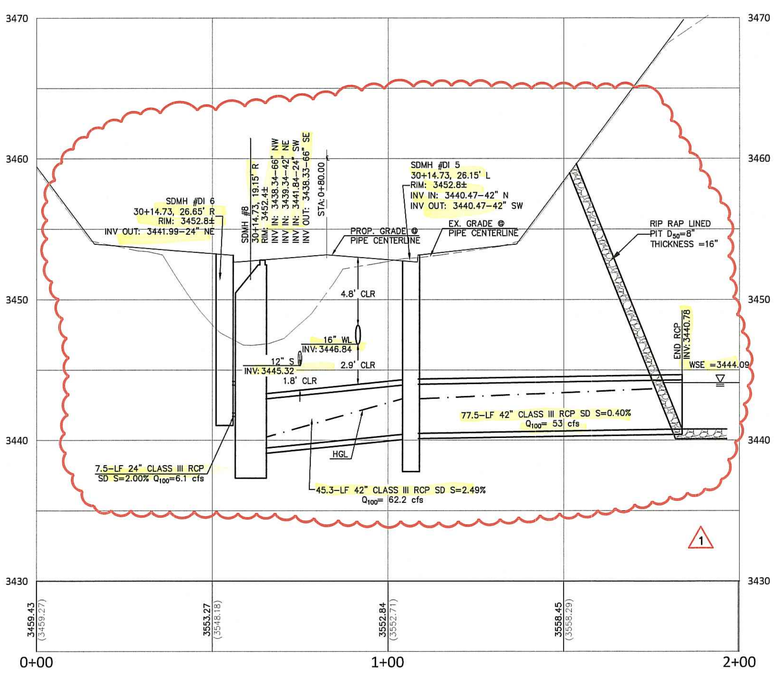
2 / C5.11 — 12" WATER LATERAL - STA: 25+62.50 (REF. SHEET C5.07)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



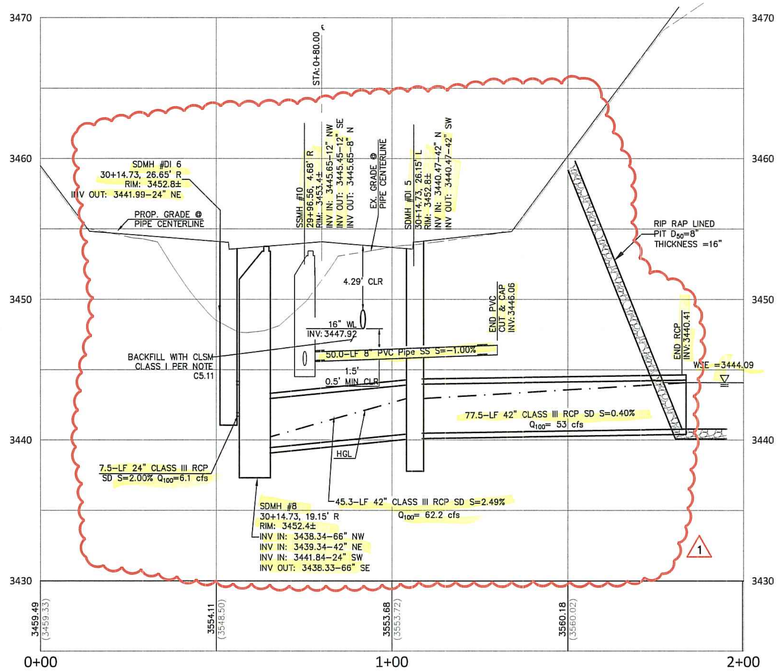
3 / C5.11 — F.H. LATERAL - STA: 27+30.00 (REF. SHEET C5.07)

PROFILE VIEW
H: 1"=20'
V: 1"=5'



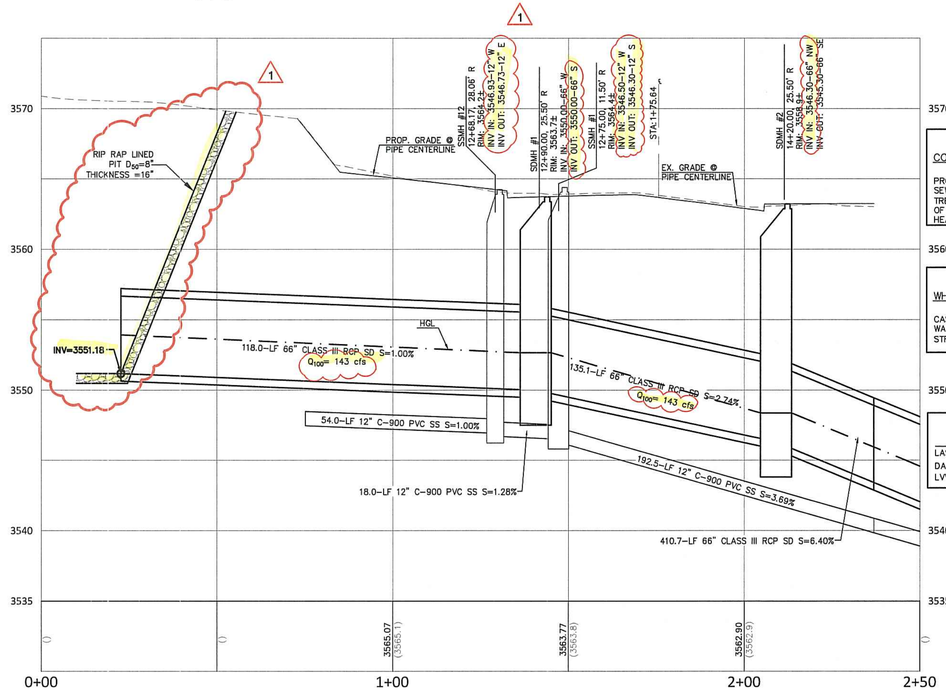
5A / C5.11 — SDMH 8 - STA: 30+14.73 WITHOUT SS (REF. SHEET C5.08) 1

PROFILE VIEW
H: 1"=20'
V: 1"=5'



5B / C5.11 — SSMH #10 - STA: 29+96.56 (REF. SHEET C5.08) 1

PROFILE VIEW
H: 1"=20'
V: 1"=5'



6 / C5.11 — SDMH 1 - STA: 12+49.17 (REF. SHEET C5.04)

PROFILE VIEW
H: 1"=20'
V: 1"=5'

THOMAS P. DYSON — PROFESSIONAL ENGINEER — STATE OF NEVADA — CIVIL — No. 11308 — EXP 12/31/18 — 1/4/18 — FOR △1 ONLY

CONTROLLED LOW STRENGTH MATERIAL (CLSM)

PROTECT WATERLINES IN PLACE. WHEREVER A WATERLINE IS ABOVE A STORM DRAIN OR SEWER COMPACTION REQUIREMENTS UNDER A WATERLINE CANNOT BE MET, BACKFILL TRENCH WITH CLASS I CONTROLLED LOW STRENGTH MATERIAL (CLSM) TO THE SPRINGLINE OF THE WATERLINE. THIS REQUIREMENT IS FOR STRUCTURAL SUPPORT ONLY. ADDITIONAL HEALTH REGULATIONS MAY APPLY PER UDACS 2.22

DROP INLET NOTE

WHERE 10 FEET PARALLEL SEPARATION IS NOT PRACTICABLE

CAST–IN–PLACE MONOLITHIC POUR WITH WATERSTOP BETWEEN SLAB AND WALLS BASE, WALLS AND TOP TO BE CONSTRUCTED WITH WATERSTOPS, CENTER BULB, OR FLAT STRIP (VINYLEX, GREENSTREAK PLASTIC PRODUCTS OR APPROVED EQUAL)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

DATE. PROJECT NO: 124806

LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

UTILITY LATERALS 2

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DESCRIPTION	DATE	DESIGN BY
1	REVISED SS & SD LOCATION	12/27/17	

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	
SHEET NUMBER	C5.11
	SHEET 16 OF 26

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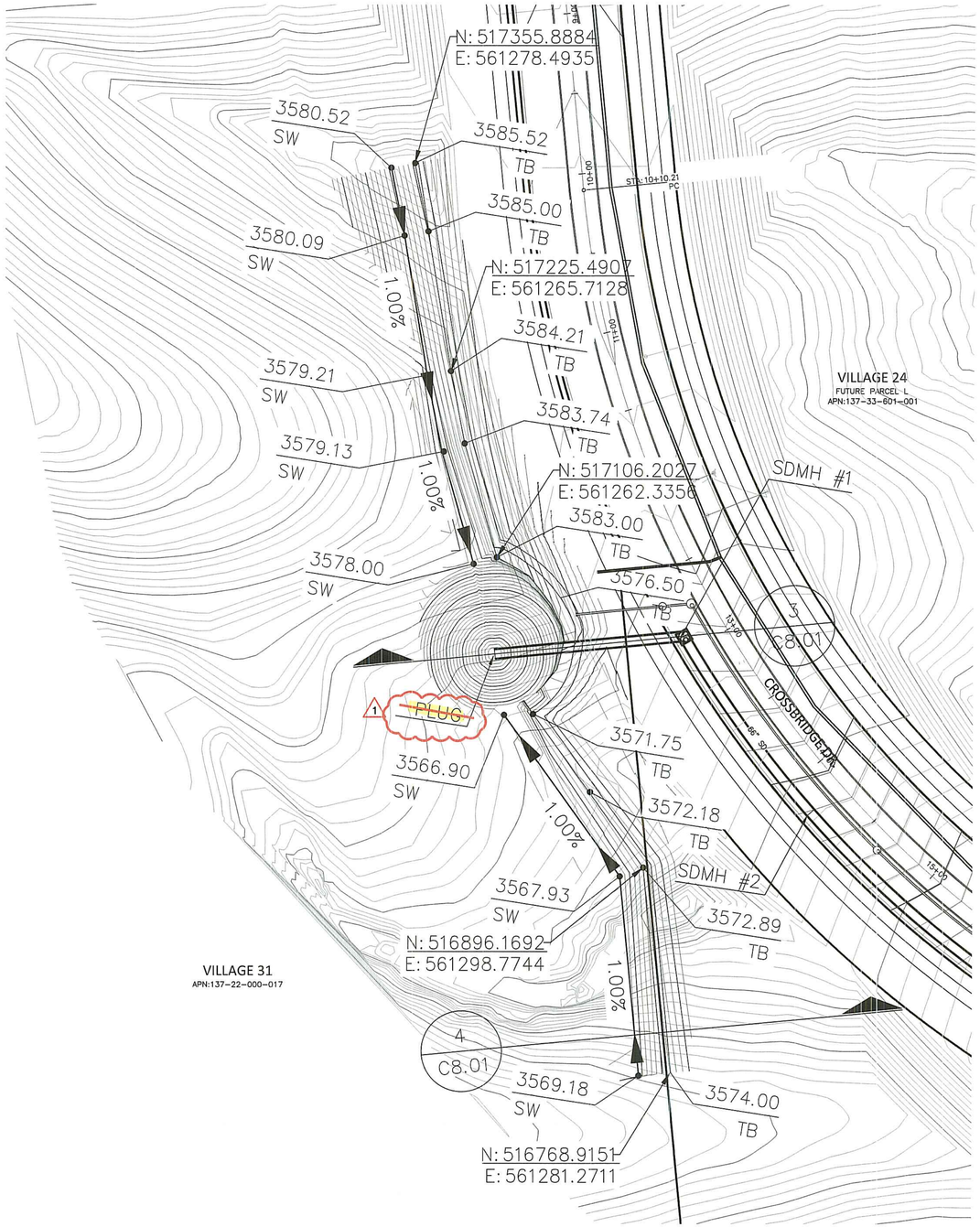

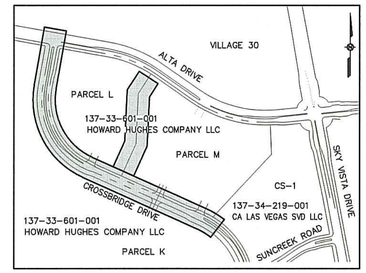

KEY MAP
NTS

GRAPHIC SCALE
40 0 20 40
SCALE: 1"=40'

BASIS OF BEARING

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 33, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., CITY OF LAS VEGAS, CLARK COUNTY, NEVADA AS SHOWN IN FILE 118, PAGE 100 OF PARCEL MAPS ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

BENCHMARK

CITY OF LAS VEGAS BENCHMARK #D368

U.S.C & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.

NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88)

989.574 METERS
3246.63 U.S. SURVEY FEET

PROFESSIONAL ENGINEER STATE OF NEVADA
THOMAS P. DYSON
CIVIL
No. 11306
EXP 12/31/18
9/4/18
FOR ⚠1 ONLY

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
DATE: _____ PROJECT NO: 124806
LVVWD APPROVED FIRE FLOW 1,500 GPM AT 20 PSI RESIDUAL

CALL BEFORE YOU D&G
AVOID CUTTING UNDERGROUND UTILITY LINES. IT'S COSTLY
Call 811
1-800-227-2600

AVOID HITTING UNDERGROUND TRAFFIC SIGNAL AND STREET LIGHT SYSTEMS. IT'S COSTLY.
CALL BEFORE YOU DO UNDERGROUND WORK
CALL 1-702-455-7511 CLARK COUNTY TRAFFIC ENGINEERING AND
CALL 1-702-432-5300 INTERNET AND AERIAL SYSTEM OF TRANSPORTATION

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

COLLINS ENGINEERS ASSUMES NO RESPONSIBILITY FOR EXISTING UTILITY LOCATIONS AND ELEVATIONS. THE UTILITIES SHOWN ON THIS DRAWING HAVE BEEN PLOTTED FROM THE BEST AVAILABLE INFORMATION. IT IS, HOWEVER, THE CONTRACTOR'S RESPONSIBILITY TO FIELD VERIFY THE LOCATION AND ELEVATION OF ALL UTILITIES PRIOR TO THE COMMENCEMENT OF ANY CONSTRUCTION. CONTRACTOR TO FIELD VERIFY ALL EXISTING SITE CONDITIONS PRIOR TO CONSTRUCTION. IF A CONFLICT EXISTS BETWEEN WHAT IS SHOWN ON THESE DRAWINGS AND WHAT EXISTS IN THE FIELD, THE CONTRACTOR IS TO NOTIFY THE ARCHITECT OR ENGINEER IMMEDIATELY.

LEGEND

EXISTING	PROPOSED		EXISTING	PROPOSED	
(0.00%)	0.00%	SLOPE			AC PAVEMENT
(0.00) XX	0.00 XX	ELEVATION TAG			6" TYPE "A" CURB
Ⓓ	Ⓓ	STORM MANHOLE			24" TYPE "L" CURB & GUTTER
		DROP INLET			30" ROLL CURB
-00-	-00-	CONTOUR			
		RETAINING WALL			
		SCREEN WALL			

PL-RIGHT-OF-WAY
PL-ADJACENT
CENTERLINE
EASEMENT LINE
FLOW LINE
SAWCUT LINE

COLLINS ENGINEERS
3130 S. DURANGO DR., SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
www.collinsengr.com

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001
ROUGH GRADING PLAN 2
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION
⚠1	12/27/17	REVISED SD INFO

DESIGN BY:

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE: 1"=40

SHEET NUMBER
C5.13
SHEET 18 OF 26

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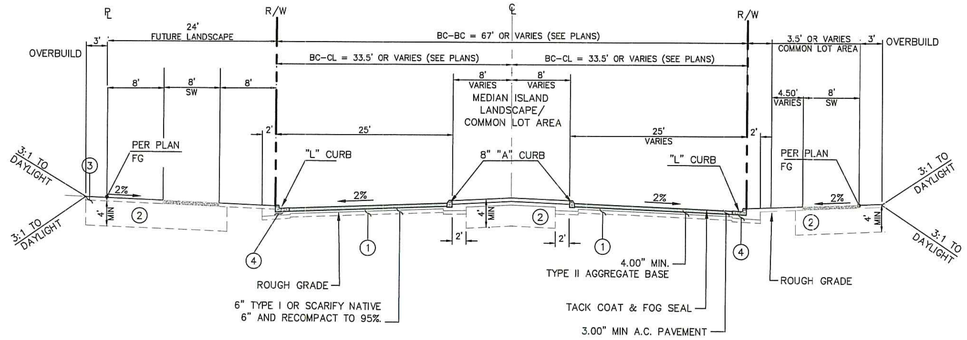
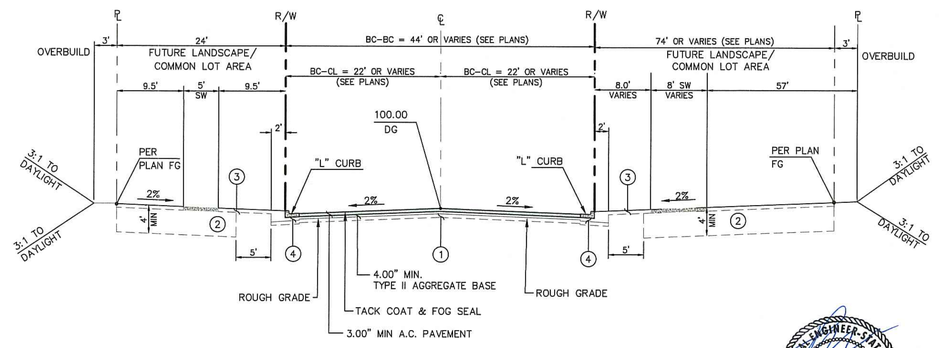
NOTES:

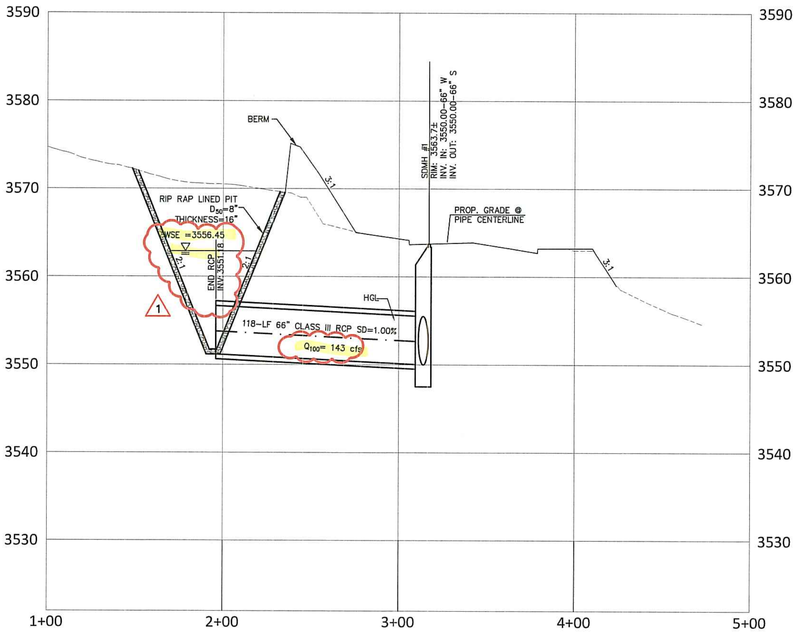
1. TYPE 1 OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%
2. LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% RIP ENTIRE AREA TO DEPTH INDICATED.
3. ROUGH GRADE (R.G.) TO BE 6" BELOW FINISHED GRADE (F.G.) FOR FUTURE LANDSCAPE PURPOSES.
4. 6" MIN TYPE II AGGREGATE BASE UNDER CURB AND GUTTER,TYPICAL



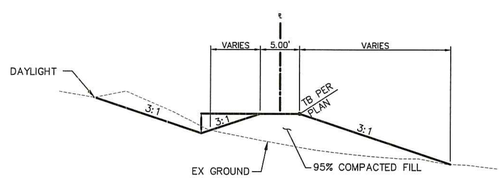
1 C8.01 — CROSSBRIDGE DRIVE
STA 6+25.51 THRU STA 12+24.51 NTS



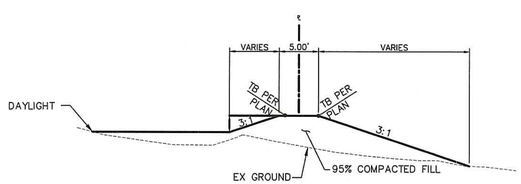
2 C8.01 — CROSSBRIDGE DRIVE
STA 13+79.24 THRU STA 30+60.00 NTS



3 C8.01 — 66" STORM DRAIN LINE
@ STA: 13+01.69 H: 1"=20' V: 1"=5'



4 C8.01 — TEMPORARY DIVERSION BERM
NTS



5 C8.01 — TEMPORARY DIVERSION BERM
NTS

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO: 124806 DATE: _____

COLLINS ENGINEERS
3130 S. DURANGO DR. SUITE 404
LAS VEGAS, NV 89117
PHONE: (702) 248-8000
FAX: (702) 248-8070
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PROFESSIONAL ENGINEER-STATE OF NEVADA
THOMAS P. DYSON
EXP 12/31/18
CIVIL
No. 11306
1/4/18
FOR ⚠ 1 ONLY

IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC
APN: 137-33-601-001

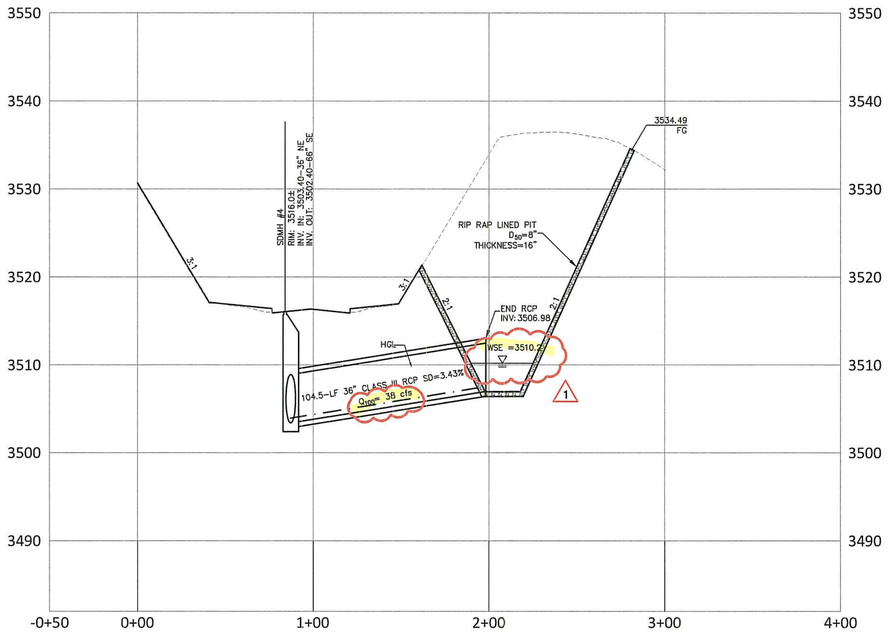
DETAILS SHEET 1

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
⚠ 1	12/27/17		REVISED SD INFO

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	
SHEET NUMBER	C8.01
	SHEET 23 OF 26

F:\PROJECTS\600\62024-223\DWG\PRODUCTION\9106-C8.01-DTL.DWG 01/03/2018 03:56:51 PM

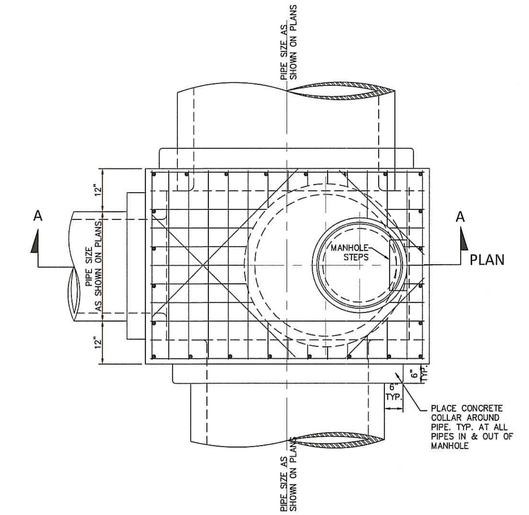


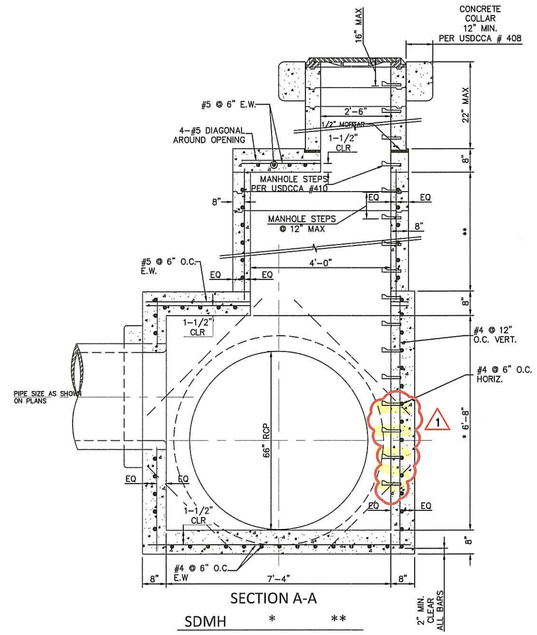
6
C8.02

36" STORM DRAIN LINE

@ STA: 20+67.73

H: 1"=20'
V: 1"=5'





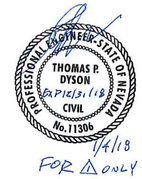
SECTION A-A

SDMH	*	**
1	6'-8"	4'-0"
2	6'-8"	3'-0"
3	6'-8"	4'-0"
4	6'-8"	4'-0"
5	10'-0"	1'-0"
6	6'-8"	4'-0"
7	6'-8"	4'-0"
8	6'-8"	5'-0"

7
C8.02

MANHOLE DETAIL

NTS



1/4/18
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IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

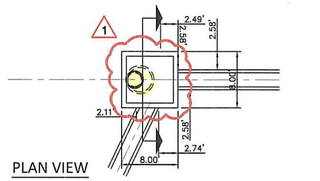
APN: 137-33-601-001

DETAILS SHEET 2

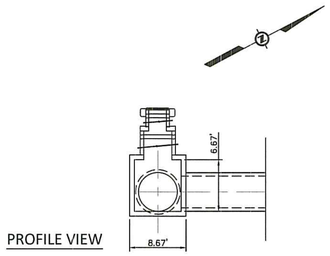
SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESCRIPTION	DESIGN BY
1	12/27/17	CONTINUE STEPS TO BOTTOM OF STRUCTURE	

CEI PROJECT:	9106
DESIGN BY:	J. SALDIVAR
DRAWN BY:	J. SALDIVAR
CHECKED BY:	K. YAMADA
DATE:	04/2017
SCALE:	
SHEET NUMBER	C8.02
	SHEET 24 OF 26

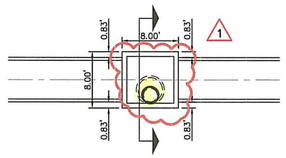


PLAN VIEW

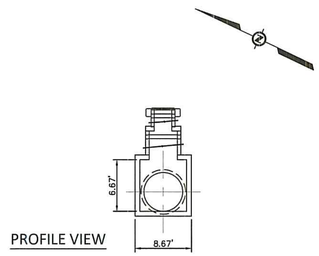


PROFILE VIEW

A C8.03 SDMH #1 NTS

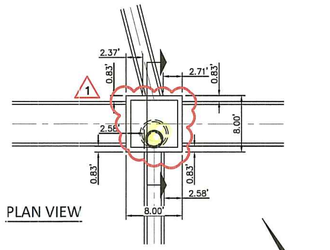


PLAN VIEW

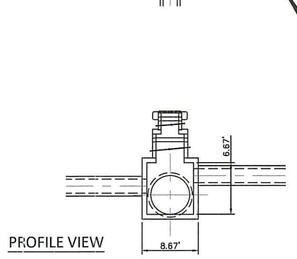


PROFILE VIEW

B C8.03 SDMH #2 NTS

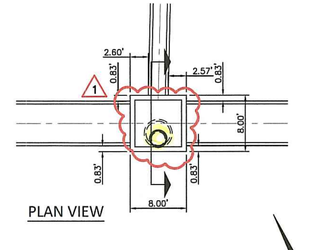


PLAN VIEW

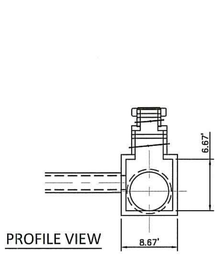


PROFILE VIEW

C C8.03 SDMH #3 NTS

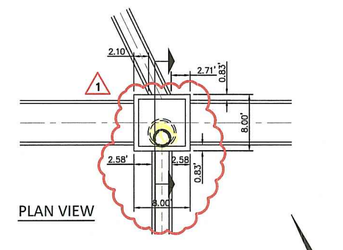


PLAN VIEW

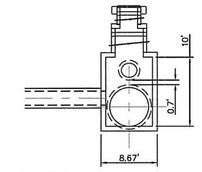


PROFILE VIEW

D C8.03 SDMH #4 NTS

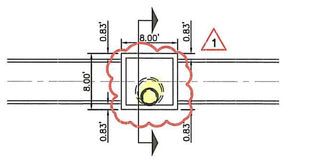


PLAN VIEW

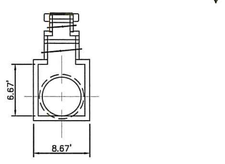


PROFILE VIEW

E C8.03 SDMH #5 NTS

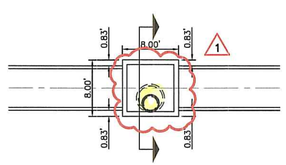


PLAN VIEW

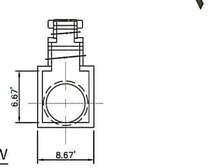


PROFILE VIEW

F C8.03 SDMH #6 NTS

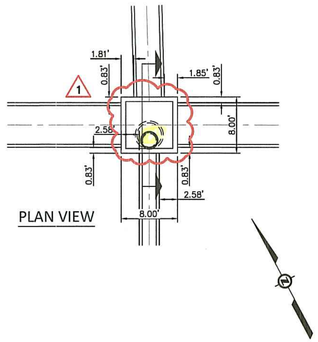


PLAN VIEW

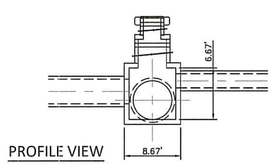


PROFILE VIEW

G C8.03 SDMH #7 NTS



PLAN VIEW



PROFILE VIEW

H C8.03 SDMH #8 NTS

THOMAS P. DYSON
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CIVIL
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PROFESSIONAL ENGINEER, STATE OF NEVADA
1/4/18
FOR ⚠1 ONLY

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IMPROVEMENT PLANS FOR THE HOWARD HUGHES COMPANY, LLC

APN: 137-33-601-001

DETAILS SHEET 3

SUMMERLIN VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 3
CITY OF LAS VEGAS

NO.	DATE	DESIGN BY	DESCRIPTION
⚠1	12/27/17		REVISED CEI INFO

CEI PROJECT: 9106
DESIGN BY: J. SALDIVAR
DRAWN BY: J. SALDIVAR
CHECKED BY: K. YAMADA
DATE: 04/2017
SCALE:

SHEET NUMBER
C8.03
SHEET 25 OF 26

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