DS #: 4136

APN: 137.22.000.015

PROJECT: Summerlin Village 24 Unit 2 Improvements - Update #3
Crossbridge Drive Improvements

SUBMITTAL: 9th Submittal

SCANNED BY/DATE: _____

CHECKED BY/DATE: _____

CITY OF LAS VEGAS
NEVADA

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: October 22, 2015
TO: **Land Development Services** Department of Public Works				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:			**COPIES TO:**
Summerlin Village 24 Unit 2 Improvements – Update #3 Crossbridge Drive Improvements (from Crossbridge Unit 1 to Sun Creek Road)				G.C. Wallace, Inc.
Cross Streets:	SWC of Sky Vista Drive & Alta Drive			Howard Hughes Corp.
File Number:	F:\Depot\DSMemos\DS4136J.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-015			CCRFCD
Zoning Action:				
FEMA Flood Zone	YES	NO **X**		
Proposed Storm Drain	YES **X**	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
1st Submittal	2/21/2007	3/29/2007	Not Approved	$400.00	63487: $400
2nd Submittal	5/4/2007	5/29/2007	Not Approved	$400.00	68552: $400
3rd Submittal	5/15/2014 & 6/5/2014	6/9/2014	Conditional Approval	$400.00	357117: $400
4th Submittal	9/22/2014	10/7/2014	Approved	$100.00	371022: $100
5th Submittal	11/6/2014	11/26/2014	Approved	$100.00	376121: $100
6th Submittal	2/10/2015	2/24/2015	Not Approved	$100.00	385212: $100
7th Submittal	5/14/2015	6/15/2015	Not Approved	$400.00	397629: $400
8th Submittal	6/22/2015	7/7/2015	Approved	$100.00	402841: $100
9th Submittal	10/6/2015	10/22/2015	See Comments Below	$400.00	417806: $400
			TOTAL FEES (LDDRS):	$2,400.00	----

REMARKS:

9th Submittal: Addendum #2 to Udpate #3

8th Submittal: Update #4 for Sky Vista Drive Improvements – Revise the connection angle of a 48"-Stub to Future Parcel K at the intersection of Crossbridge Drive and Suncreek Road

6th & 7th Submittals: Update #3 and Addendum to construct a channel along the west boundary of *Village 24* and Extend *Crossbridge Drive* beyond *Suncreek Road*

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

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

1. Please note that any future technical drainage study submittals that differ from the Master Drainage Study (ie. Changes in pods, infrastructure, flows etc.) will require an update to the Master Drainage Study and the update must be approved by the *City of Las Vegas Flood Control Section* prior to final approval of technical drainage study.

2. **Sheet 13, Sheet 21 and Sheet 24**:

   - The proposed angle of connection from the south 24"-RCP in *Crossbridge Drive* to the most south RCB is somewhat against the mainstream flow. Provide a storm drain manhole in the 24"-RCP to make a better angle to the box.

   - Clearly show the kind of surface materials used in the public maintenance access ramps such as Type II on the plans. Add a cross section to show as such.

   - Thickness of the portion of sidewalk through the access ramp easements must be increased to accommodate the traffic of maintenance vehicles and equipment. Provide a note on plan and cross section accordingly.

   - Shift access to give 8'-clearance from the drop inlet at Sta. 42+11.00, 33' RT.

   - On *Sheet 24*, it appears that the lineworks of other utilities have been frozen. Show them on all pertinent sheets accordingly.

3. **Sheet 16:** It appears that the proposed headwall need to be extended to taper to the grades on both of the side slopes. Provide detail grading and a cross section and extend headwall as wing wall if necessary.

4. **Sheet 48:** Call out the proposed fall protection railing (Typ.) in *Profile A*.

5. **Sheet 52:** In reference to *Section A* and *Section B*, the slope of the ramp access is about 2:1 slope (3'-3" to 1'-5") which is too steep for maintenance vehicles and equipment. Extend the ramp slope for access and limit the slope to 10:1. Review and revise accordingly.

6. Provide a standard detail for cut-off wall at riprap pad. Provide a layer of geotextile filter membrane under the riprap with a base underneath. The cut-off wall must be at a minimum of 1' below the riprap. Revise all pertinent detail sections accordingly.

7. Submit a set of plans to *City of Las Vegas Street & Sanitation Department*, attention to Matthew Meyer, *Operations and Maintenance Program Manager,* for his final review. Obtain approval prior to the final acceptance of the drainage study.

8. The project proposes to build temporary drainage facilities 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.

9. Structural plans for the storm drain improvements (6# 5'x5' RCB culverts) and the *USBR Type IV Stilling Basin* must be submitted for review. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the ***Building Department*** for processing. The engineer must provide a copy of ***Building Department*** approval of the structures to *Flood Control* prior to final acceptance of the improvement plans.

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

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

END OF REMARKS
Osk/ays

T/R/S: T20S/R59E/33 and 34
AREA K-22

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

TRANSMISSION OK

JOB NO.	2922
DESTINATION ADDRESS	7028042299
PSWD/SUBADDRESS	
DESTINATION ID	
ST. TIME	10/22 16:30
USAGE T	00'51
PGS.	3
RESULT	OK

CITY OF LAS VEGAS
INTER-OFFICE MEMORANDUM

DATE: October 22, 2015

TO:
Land Development Services
Department of Public Works

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

SUBJECT: Drainage Study for:
Summerlin Village 24 Unit 2 Improvements – Update #3
Crossbridge Drive Improvements
(from Crossbridge Unit 1 to Sun Creek Road)

COPIES TO:
G.C. Wallace, Inc.
Howard Hughes Corp.
Bart Anderson, P.E., DevCo
CCRFCD

Cross Streets:	SWC of Sky Vista Drive & Alta Drive	
File Number:	F:\Depot\DSMemos\DS4136J.doc	
Parcel Number:	137-22-000-015	
Zoning Action:		
FEMA Flood Zone	YES	NO X
Proposed Storm Drain	YES X	NO

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
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9th Submittal	10/6/2015	10/22/2015	See Comments Below	$400.00	417806: $400
			TOTAL FEES (LDDRS):	$2,400.00	----

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9th Submittal: Addendum #2 to Udpate #3

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6th & 7th Submittals: Update #3 and Addendum to construct a channel along the west boundary of *Village 24* and Extend *Crossbridge Drive* beyond *Suncreek Road*

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

	is approved subject to [illegible]

Albert Sung

From: Matthew Meyer
Sent: Monday, October 05, 2015 9:28 AM
To: Peter Jackson; Albert Sung
Cc: Oh-Sang Kwon
Subject: Summerlin Village 24 - Crossbridge Drive Unit 2

Peter/Albert, reviewed the subject project improvement plans, can I get your input on the last 2 questions:

- Install fall protection on headwall. In previous conversations this will be included on the landscape plans, just a reminder.
- The sidewalk thickness need to be increased through the easement. In previous conversations this will be included on the landscape plans, just a reminder.
- Request for 8' of clearance be provide between the drop inlet wing at 42+11, 33' RT and the drainage/access easement on the remote possibility a future driveway is necessary for channel access.
- Access to the west side of the northern barrel appears restricted by the riprap/embankment due to the angle of the culverts.
- The upstream rip rap extends below the depth of the cutoff wall, should the cutoff walls be extended below the rip rap? The downstream cutoff and riprap appear to be approximately the same depth. Is there a minimum depth differential between the cutoff wall and riprap that should be provided?
- Do you have any concern with the angle the south 24" storm drain lateral connects to the RCB?

Access for the maintenance of the RCB's is acceptable.

Thank you,
Matthew Meyer
Operations and Maintenance Program Manager
City of Las Vegas
(702) 229-1688 - office
(702) 283-7307 - cell

LETTER OF TRANSMITTAL

GCW ENGINEERS \ SURVEYORS

Project No.: 62024-221/62024-222
Date: October 6, 2015

To: City of Las Vegas
333 N. Rancho Drive
Las Vegas, NV 89106
Attention: Albert Sung, PE

Subject: **2nd RTC Update #3 Technical Drainage Study for Summerlin Village 24 - Unit 2 Improvements – Crossbridge Drive Improvements (Crossbridge Unit 1 to Suncreek Road**

Sent Via: Hand Delivery

Items being sent:

One (1) Copy – Subject Study
One (1) Copy – Improvement Plans (rolled)
One (1) Copy – Stamped and Signed Standard Form 1 (bound)
CD
GCW Check (#108193) for $400

These items are submitted:

- ☐ At your request
- ☒ For your approval
- ☐ For your review and comments
- ☒ For your action
- ☐ For your files
- ☐ For your information

Acknowledgment of receipt:

☒ **Required**

Received by: _____
Date: _____
Time: _____

Remarks:

Cordially,

GCW, INC.

Rachael R. Dennis

Rachael R. Dennis, PE
Project Engineer
Flood Control Division

Copies to: Ryan Belsick, GCW
Josh Johnson, GCW
Vicki Marjerrison, GCW
Jennifer Veras, GCW

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

2nd RESPONSE TO COMMENTS
ON THE
UPDATE #3 TO THE
TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 24 UNIT 2 IMPROVEMENTS - CROSSBRIDGE DRIVE
(CROSSBRIDGE UNIT 1 TO SUNCREEK ROAD)

62024-222

October 2015

GCW
ENGINEERS \ SURVEYORS

Prepared for:

The Howard Hughes Company, LLC
10801 W. Charleston Blvd., 3rd Floor
Las Vegas, Nevada 89135
Phone: (702) 791-4300
Fax: (702) 791-4450

62024.221/62024.222

HYDROLOGIC CRITERIA AND DRAINAGE MANUAL

DRAINAGE STUDY INFORMATION FORM

Name of Development: Summerlin Village 24 Unit 2 Improvements- Crossbridge Drive (Crossbridge Unit 1 to Suncreek Road) Date: October 2015

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

East/West: Suncreek Road

b) Section: 22 and 33 Township: 20S Range: 59E

c) APN: 137-33-801-001 and 137-22-000-017

Name of Owner: The Howard Hughes Company, LLC.

Telephone No.: 791-4300 Fax No. 791-4450 E-Mail Address: Not available

Address: 10801 W. Charleston Blvd, 3rd Floor; Las Vegas, Nevada 89135

Contact Person-Name: Rachael R. Dennis, P.E. **Telephone No.:** (702) 804-2000

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

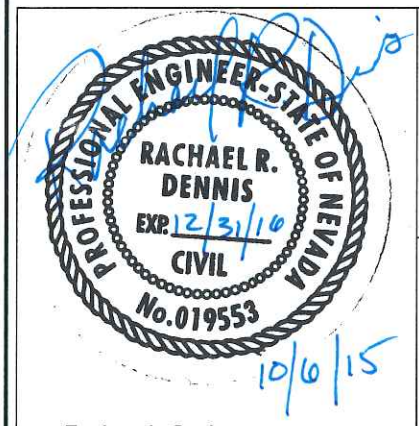
Firm: GCW, INC.

Address: 1555 S. Rainbow Blvd; Las Vegas, NV 89146

Type of Land Development/Land Disturbance

☐	Rezoning	☐	Subdivision Map	☐	Clearing and Grading Only
☐	Parcel Map	☐	Planned Unit Development	☒	Other (Please specify below)
☐	Large Parcel Map	☐	Building Permit	Street, Storm Drain and Channel Improvements	

1. Total Owned Land Area: At Site: 424 ± acres Being Developed/Disturbed: 40 ± acres
2. Is a portion or all of the subject property located in a designated FEMA Flood Hazard Area? ☐ **Yes**** ☒ **No**
3. Is the property bordered or crossed by an existing or proposed Clark County Regional Flood Control District Master Planned Facility? ☒ **Yes**** ☐ **No**
4. Proposed type of development (Residential, Commercial, Etc.): Street Improvements, including storm drain and rough grading and western boundary channel improvements
5. Approximate upstream land area which drains to the subject site: 540 ± acres
6. Has the site drainage been evaluated in the past? ☒ **Yes** ☐ **No** If yes, please identify documentation: Summerlin Village 24 Conceptual Study, GCW; Summerlin Village 24 Unit 2 Improvements, GCW; Summerlin Village 24 Unit 1, GCW.
7. If known, please briefly identify the proposed discharge point(s) of runoff from the site: Existing storm drain in Suncreek Road and Crossbridge Drive and existing wash south of the site;
8. Briefly describe your proposed schedule for the subject project: ASAP



Engineer's Seal

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

*New Required Field

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

Local Entity File No.

Revision	Date

REFERENCE:

STANDARD FORM 1

CITY OF LAS VEGAS INTER-OFFICE MEMORANDUM				DATE: June 15, 2015
TO: Land Development Services Department of Public Works				FROM: Albert Sung, P.E. Flood Control Project Engineer Department of Public Works
SUBJECT:	Drainage Study for:			COPIES TO:
Summerlin Village 24 Unit 2 Improvements – Update #3 Crossbridge Drive Improvements (from Crossbridge Unit 1 to Sun Creek Road)				G.C. Wallace, Inc.
Cross Streets:	SWC of Sky Vista Drive & Alta Drive			Howard Hughes Corp.
File Number:	F:\Depot\DSMemos\DS4136G.doc			Bart Anderson, P.E., DevCo
Parcel Number:	137-22-000-015			CCRFCD
Zoning Action:				
FEMA Flood Zone	YES	NO X		
Proposed Storm Drain	YES X	NO		

HISTORY	DATE RECEIVED	DATE REVIEWED	COMMENTS	REVIEW FEES	FEES PAID Transaction #
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7th Submittal	5/14/2015	6/15/2015	See Comments Below	$400.00	397629: $400
			TOTAL FEES (LDDRS):	$1,900.00	----

REMARKS:

6th & 7th Submittals: Update #3 and Addendum to construct a channel along the west boundary of *Village 24* and Extend *Crossbridge Drive* beyond *Suncreek Road*

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

	is approved subject to conformance to all City standards and the following conditions:
X	must be resubmitted or supplemented including the following:
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1. Please note that any future technical drainage study submittals that differ from the Master Drainage Study (ie. Changes in pods, infrastructure, flows etc.) will require an update to the Master Drainage Study and the update must be approved by the *City of Las Vegas Flood Control Section* prior to final approval of technical drainage study.

2. **Sheet 13, Sheet 21 and Sheet 24:**

   - ***Second request***: Identify the maintenance access path/ramp as **Public Drainage Easement** (privately maintained by *Howard Hughes Companies*) which must be dedicated and recorded prior to the final approval of the improvement plans.

- Coordinate with *City of Las Vegas Street & Sanitation Department* for their comments and approval prior to the final acceptance of the subject drainage study.

3. **Sheet 40**:

   - The proposed 12"-high tumbling blocks within the 6# 5'x4' RCBs appear to pose difficulty for maintenance crew when they need repair in the future. This may merit taller and wider boxes. Also, the 30"-d_{50} riprap at the upstream and the 36"-d_{50} riprap at the downstream ends of the culverts appear not drivable for the maintenance vehicles. These concerns must be discussed and resolved with the *City Street & Sanitation Department* prior to the final approval of the drainage study.

4. **Sheet 35**:

   - Section Detail 6: Provide erosion protection on the major flow side of the proposed berm. Review and revise in the next submittal.

5. The project proposes to build temporary drainage facilities 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. Structural plans for the storm drain improvements must be submitted for review. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the ***Building Department*** for processing. The engineer must provide a copy of ***Building Department*** approval of the structures to *Flood Control* prior to final acceptance of the improvement plans.

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:

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   steven.w.roberts@usace.army.mil

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END OF REMARKS
Osk/ays

T/R/S: T20S/R59E/33 and 34
AREA K-22

2nd RESPONSE TO COMMENTS
ON THE
UPDATE #3 TO THE
TECHNICAL DRAINAGE STUDY
FOR
SUMMERLIN VILLAGE 24 UNIT 2 IMPROVEMENTS - CROSSBRIDGE DRIVE
(CROSSBRIDGE UNIT 1 TO SUNCREEK ROAD)

62024-222

October 2015

Prepared for:

The Howard Hughes Company, LLC
10801 W. Charleston Blvd., 3rd Floor
Las Vegas, Nevada 89135
Phone: (702) 791-4300
Fax: (702) 791-4450

Prepared By:

GCW, Inc.
1555 South Rainbow Boulevard
Las Vegas, NV 89146
Phone: (702) 804-2000
Fax: (702) 804-2299

GCW
ENGINEERS \ SURVEYORS

62024-221

October 6, 2015

Albert Sung, PE
Flood Control Project Engineer
City of Las Vegas Department of Public Works
333 N. Rancho Drive
Las Vegas, NV 89106

Re: Response to Comments on the Update #3 to the Technical Drainage Study for Summerlin Village 24 Unit 2 Improvements – Crossbridge Drive (Crossbridge Unit 1 to Suncreek Road)

Dear Mr. Sung:

The purpose of this letter is to address your comments dated June 15, 2015, regarding the above-referenced project. The comments are individually addressed as follows:

Comment: "1. Please note that any future technical drainage study submittals that differ from the Master Drainage Study (ie. Changes in pods, infrastructure, flows etc.) will require an update to the Master Drainage Study and the update must be approved by the *City of Las Vegas Flood Control Section* prior to final approval of technical drainage study."

Response: Noted.

Comment: "2. **Sheet 13, Sheet 21 and Sheet 24:**

"***Second request***: Identify the maintenance access path/ramp as **Public Drainage** Easement (privately maintained by *Howard Hughes* Companies) which must be dedicated and recorded prior to the final approval of the improvement plans.

"Coordinate with *City of Las Vegas Street & Sanitation Department* for their comments and approval prior to the final acceptance of the subject drainage study."

Response: Noted. The maintenance access ramps have been labeled as "Public Access Easement (Privately Maintained)." The culverts and erosion protection for the culverts have been labeled as "Public Drainage Easement To Be Publically Maintained" on Sheet 24.

GCW has been coordinating with CLV Streets and Sanitation regarding maintenance and access concerns. Several meetings have been held with CLV and GCW to

provide sufficient maintenance access to the culvert cells. A concrete pad has been provided in lieu of riprap at the upstream and downstream end of the cells to provide a buffer to turn. Additionally, the access ramp on the west side of Crossbridge Drive has been shifted to avoid the drop inlet at approximate Station 42+00.

Comment: "3. **Sheet 40:**

"The proposed 12"-high tumbling blocks within the 6# 5'x4' RCBs appear to pose difficulty for maintenance crew when they need repair in the future. This may merit taller and wider boxes. Also, the 30"-d_{50} riprap at the downstream ends of the culverts appear not drivable for the maintenance vehicles. These concerns must be discussed and resolved with the *City Street & Sanitation Department* prior to the final approval of the drainage study."

Response: Based on discussions with CLV Flood and Streets and Sanitation Department, it was determined that a stilling basin for energy dissipation should be located at the downstream end of the culverts outside of the RCBs for ease of maintenance. Additionally, the culverts have been revised to six (6) - 5-foot wide by 5- foot high RCBs to address maintenance access concerns. In order to provide the additional 1-foot of height, the profile of the RCBs was revised. Revised hydraulic calculations have been included in Appendix B. Section 1002.3 of the Manual specifies that an energy dissipater be provided for outlet velocities greater than 15 fps. Based on a maximum discharge of 93 cfs (554 cfs / 6 RCB cells = 93 cfs / RCB cell) from one 5-foot wide by 5-foot high RCB cell at the outlet, the exit velocity is approximately 17.2 fps under a supercritical flow regime. Therefore, a USBR Type IV Stilling Basin has been provided at the culvert crossing outlet for energy dissipation. Calculations used to determine the dimensions for the USBR Type IV Stilling Basin have been included in Appendix B. The dimensions have been labeled on the improvement plans. Structural calculations for the stilling basin will be submitted hereafter. We request that the structural calculations for the USBR Type IV Stilling Basin be a condition of approval. Copies of the normal depth calculations have been included in Appendix B.

Due to the revised culvert crossing and stilling basin, the hydraulic models and calculations have been updated to account for the revised culvert slopes. The hydraulic model for COS-1 and COS-2 was previously submitted as one model and has been re-analyzed as two separate models (COS1 and COS2) with this report. The COS1 HEC-RAS Model runs from the western boundary channel and ends at the outlet of the proposed culvert upstream of the stilling basin. The COS2 HEC-RAS Model begins at the downstream end of the stilling basin and ends at the existing downstream facilities located at the intersection of Sky Vista and Crossbridge Drive. Copies of the revised models have been included Appendix B. Digital copies of the models and reports have been included on CD in Appendix B.

A 9-foot wide concrete pad has been provided at the upstream and downstream ends of the culvert to provide drivable access from the access ramps to the culverts. The width and location of the drivable access ramps and concrete pads have been coordinated with the CLV Streets and Sanitation department.

Comment: "4. **Sheet 35:**

Section Detail 6: Provide erosion protection on the major flow side of the proposed berm. Review and revise in the next submittal."

Response: Riprap with a D50 = 12-inches was shown on Figure9U3 and used in the hydraulic models, but was inadvertently omitted on the plans. Riprap has been provided along the major flow side of the berm and is shown on Sheet 31.

Comment: "5. The project proposes to build temporary drainage facilities 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 conditionally approved, the engineer should contact the *City's Land Development Section* (229-6371) to begin the agreement process."

Response: Noted.

Comment: "6. Structural plans for the storm drain improvements must be submitted for review. Provide a soils report, structural calculations and specifications, two wet stamped structural sets, and a grading plan to the ***Building Department*** for processing. The engineer must provide a copy of ***Building Department*** approval of the structures to *Flood Control* prior to final acceptance of the improvement plans."

Response: Noted.

Comment: "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:

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St. George, UT 84790
(435) 986-3979 (Office)
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Response: Noted.

If you have any questions or require additional information, please contact our office at 804-2000.

Cordially,

GCW, INC.

Rachael R. Dennis, PE
Project Manager
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RD/vlr

Enclosures

c: Chris Anderson, THHC
Vicki Marjerrison, GCW
Josh Johnson, GCW
Ryan Belsick, GCW

UPDATE#3 TO THE TECHNICAL DRAINAGE STUDY FOR
SUMMERLIN VILLAGE 24 UNIT 2 IMPROVEMENTS – CROSSBRIDGE DRIVE

Appendix A. Hydrologic Calculations and Information

1. Figure 7U3R – Interim Conditions Drainage Map
   (Included in Previous Submittal)
2. Figure 8U3R – HEC-RAS Cross Section Exhibit (Western Boundary)
   (Included in Previous Submittal)
3. Figure 9U3R – HEC-RAS Cross Section Exhibit (Parcel COS-1 & COS-2)

Appendix B. Hydraulic Calculations and Information

1. Manning's N Calculations
2. Inlet Control Calculations
3. Riprap Protection Calculation
4. USBR Type IV Stilling Basin Calculation
5. Culvert Normal Depth Calculation
6. COS-1: Ultimate Conditions HEC-RAS Model (On CD)
7. COS-2: Ultimate Conditions HEC-RAS Model (On CD)

APPENDIX A

Hydrologic Calculations



NORTH
SCALE 1" = 200 feet

200 0 200 400
SCALE FEET

LEGEND

- SUBBASIN BOUNDARY
- PRORATED SUBBASIN BOUNDARY
- ON8R — DRAINAGE SUBBASIN
- ON8R-1 — PRORATED DRAINAGE SUBBASIN
- CRR1 — CONCENTRATION POINT
- FLOW DIRECTION

SUMMARY OF HEC-1 MODEL
INTERIM CONDITION

Basin	Remarks	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
RG6	Rough-graded Alta and offsite to north	40.2	122	56
7-2B	Offsite area west of Summerlin boundary	60.4	182	82
7-2A*	Offsite area west of Village 24; drains south within western boundary channel	283.5	636	287
CRR1*	Combine flows at Village 24 boundary at northerly existing wash: 7-2B+7-2A	---	760	331
DIVS*	Flow diversion to the south	---	259	113
DCRR1	Remaining flow that continues to culverts at Crossbridge	---	501	218
RG6C*	Offsite area draining to multiple culverts under Crossbridge	30.7	85	38
CP12A*	Combine flows at upstream side of culverts: DCRR1+RG6C	---	547	234
CD1**	Portion of Crossbridge Drive draining to culverts under Crossbridge	3.7	13	7
CP12B*	Combine flows at downstream side of culverts: CD1+CP12A	---	553	237
C*	Future parcel C**	24.9	61	25
ON7R2	Onsite area southeast of multiple culverts at Crossbridge	20.4	60	26
CPRCB*	Combine flows at existing 7' x 7' open inlet in Unit 1	---	633	269
CBRG	Rough-graded Crossbridge Drive	12.2	34	17
ST6	Suncreek Road	1.8	7	4
RG6D	Area southwest of Alta and Sky Vista	4.8	14	6
RG6A	Area west of Crossbridge; crosses Crossbridge at dip section	10.2	28	13
RG6B	Area west of Crossbridge; crosses Crossbridge at dip section	44.3	116	51
RG6E	Area bounded by Alta, Crossbridge, Suncreek, Sky Vista	44.8	123	54
CP8	Combine flows in Sky Vista storm drain at intersection with Suncreek	---	289	125
ST2	Sky Vista between Alta and Crossbridge	10.0	33	17
RG6F	Area south of Suncreek and west of Sky Vista; drains to open inlet to Sky Vista storm drain	17.2	48	21
CP9	Combine flows in Sky Vista storm drain: CP8+ST2+RG6F	---	364	160
CP9B	Combine flows at existing 7' x 7' open inlet in Unit 1 and flows in Sky Vista storm drain	---	961	422
OFF6	Offsite area west of Village 24 and drains south within western boundary channel	3.5	13	6
OFF7	Offsite area west of Village 24 drains south within western boundary channel	76.1	203	91
OFF8	Offsite area west of Village 24 drains south within western boundary channel	13.8	40	18
OFF9	Offsite area west of Village 24 drains south within western boundary channel	4.4	15	7
OFF10	Offsite area west of Village 24 drains south within western boundary channel	7.4	24	11
OFF11A	Offsite area west of Village 24; drains north within western boundary channel	91.6	252	113
CRR2	DIVS+COFF10+OFF11A	---	728	325
ON11	Onsite area west of existing berm	34.5	97	44
ON7R*	Onsite area draining south to RCB stub	7.3	21	9
ON8R*	Onsite area west of Crossbridge	27.2	77	34
CP1	Combine portions of onsite area west of Crossbridge: ON7R + ON8R	---	97	44
CD2**	Portion of Crossbridge Drive	3.8	13	7
ON10R	Onsite area between existing berm and Crossbridge	5.4	16	7
CP2	Combine flows in Crossbridge storm drain: CP1 + ON10R + CD2	---	126	57
OFF11B*	Offsite area south of Crossbridge	56.8	153	68
CP11	Combine offsite area west of Village 24+COP2+ON11+OFF11B	---	1086	492
CD3**	Portion of Unit 2 Crossbridge improvements that drains to existing Unit 1 improvements	1.4	6	3

* Revised with Update #3.
** Referenced from the Update #2 Conceptual Study.

SUMMARY OF PRORATED STORM FLOWS
INTERIM CONDITION
100-Year and 10-Year Runoff

Parent Basin	Area (ac)	Q_{100} (cfs)	Unit Flow (cfs/ac)	Q_{10} (cfs)	Unit Flow (cfs/ac)
RG6	40.16	122	3.04	56	1.39
RG6D	4.79	14	2.92	6	1.25
RG6E	44.8	123	2.75	54	1.21
RG6F	17.2	48	2.79	21	1.22
ON8R*	24.9	76	3.05	34	1.37
Prorated Subbasins					
SubBasin	Area (ac)	Unit Flow (cfs/ac)	Q_{100} (cfs)	Unit Flow (cfs/ac)	Q_{10} (cfs)
RG6-1	24.42	3.04	74	1.39	34
D1A	1.62	2.92	5	1.25	2
D1B	2.42	2.92	7	1.25	3
D2	0.75	2.92	2	1.25	1
E1	2.34	2.75	7	1.21	4
E2A	8.53	2.75	23	1.21	10
E2B	7.06	2.75	19	1.21	9
E3A	23.03	2.75	63	1.21	28
E3B	3.84	2.75	11	1.21	5
F1	1.55	2.79	4	1.22	2
F2	3.87	2.79	11	1.22	5
F3	11.79	2.79	33	1.22	14
ON8R-1	3.77	3.05	12	1.37	5

CROSS SECTION	DISCHARGE (cfs)	ACTUAL DEPTH (ft)	VELOCITY (ft/s)	SCOUR PROTECTION REQUIRED
CH1	1900	0.9	9.2	Gabions/5-foot cutoff wall
CH2	1900	1.2	11.2	Gabions/5-foot cutoff wall
CH3	1900	0.8	8.9	Gabions/5-foot cutoff wall

Note: Table is referenced from the Unit 1 Improvements.

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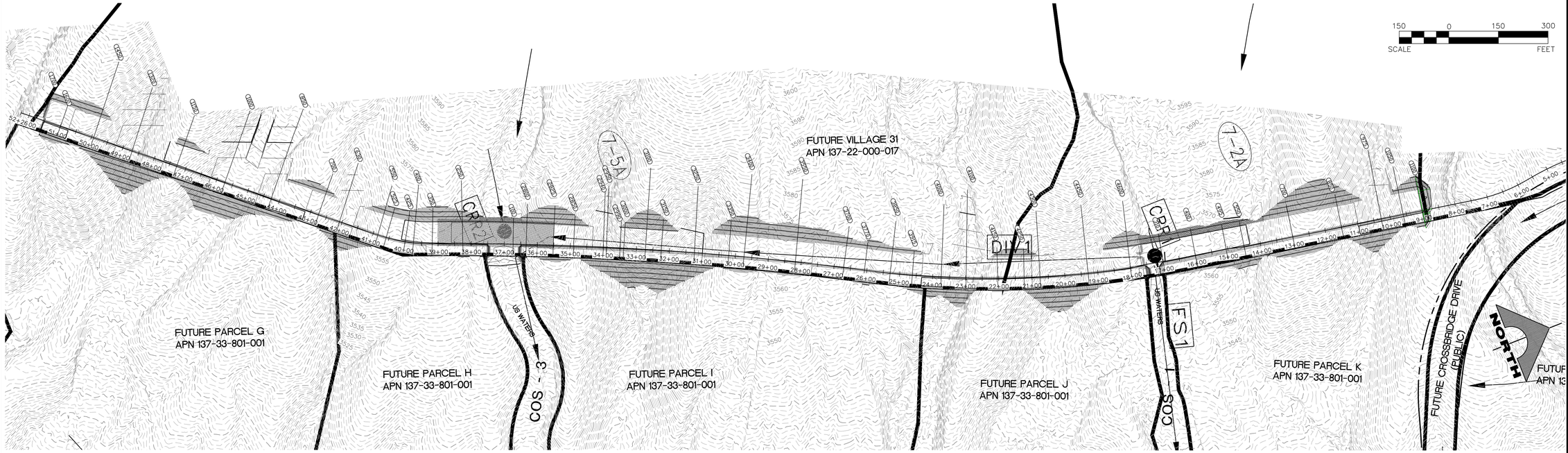
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SUMMERLIN VILLAGE 24
UNIT 2 IMPROVEMENTS
FIGURE 7U3R
INTERIM CONDITION DRAINAGE MAP

DRAWING
FIG7U3R
OF SHTS

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CRR2B - HYDRAULIC MODELS RESULTS SUMMARY AND SUPER-ELEVATION CALCULATIONS

Sta	Plan Sta	ULT Q	FL Elevation	WS Elevation	Depth	Vel	Top Width	Froude #	Radius	Freeboard	Superelevation	Total Depth	Actual Depth	Riprap
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft)			(ft)	(ft)	(ft)	(ft)	(D50- inches)
1700	51+50.00	253	3562.50	3563.42	0.92	4.39	65.52	0.83	0	1.0	0.0	1.9	3.0	-
1600	51+00.00	253	3562.19	3563.18	0.99	4.04	66.08	0.73	0	1.0	0.0	2.0	3.0	-
1450	49+90.40	253	3561.52	3562.33	0.81	5.03	64.83	1.01	0	1.1	0.0	1.9	3.0	-
1320	48+67.16	253	3560.69	3561.61	0.92	3.25	109.26	0.68	0	1.0	0.0	1.9	3.0	-
1150	47+25.00	253	3559.76	3560.68	0.92	4.40	65.51	0.83	0	1.0	0.0	1.9	3.0	-
1000	45+70.96	253	3558.75	3559.51	0.76	4.13	100.83	0.93	0	1.0	0.0	1.8	3.0	-
850	44+22.48	253	3557.76	3558.73	0.97	3.03	111.63	0.62	0	1.0	0.0	2.0	3.0	-
700	42+71.49	253	3556.76	3557.57	0.81	5.02	64.97	1.01	0	1.1	0.0	1.9	3.0	-
630	42+04.74	253	3556.24	3557.25	1.01	3.01	109.36	0.60	0	1.0	0.0	2.0	3.0	-
550	40+83.66	253	3555.49	3557.15	1.66	2.03	81.48	0.29	500	1.0	0.0	2.7	3.0	-
525	40+56.00	253	3555.31	3557.08	1.77	2.19	70.63	0.30	500	1.0	0.0	2.8	3.5	-
425	40+00.00	253	3554.93	3557.07	2.14	1.78	72.92	0.22	500	1.0	0.0	3.1	3.5	-
400	39+72.21	253	3554.77	3557.07	2.30	1.63	75.14	0.20	500	1.0	0.0	3.3	3.5	-
350	39+14.98	720	3554.38	3556.62	2.24	4.83	73.39	0.60	11926	1.0	0.0	3.2	3.5	12
250	38+23.68	720	3553.79	3556.00	2.21	4.88	73.34	0.61	11926	1.0	0.0	3.2	3.5	12
100	36+32.06	720	3553.33	3555.35	2.02	5.42	71.31	0.70	11926	1.0	0.0	3.0	3.5	12, 24 (LOB)

CRR2A - HYDRAULIC MODELS RESULTS SUMMARY AND SUPER-ELEVATION CALCULATIONS

Sta	Plan Sta	ULT Q	FL Elevation	WS Elevation	Depth	Vel	Top Width	Froude #	Radius	Freeboard	Superelevation	Total Depth	Actual Depth	Riprap
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft)			(ft)	(ft)	(ft)	(ft)	(D50- inches)
4600	18+00.00	287	3558.90	3560.60	1.70	2.60	70.22	0.37	11926	1.0	0.0	2.7	3.0	-
4450	19+28.47	540	3558.51	3560.27	1.76	3.73	93.60	0.51	11926	1.0	0.0	2.8	3.0	-
4300	20+74.12	540	3558.07	3559.91	1.84	4.20	88.08	0.56	11926	1.0	0.0	2.8	3.0	-
4250	21+22.19	540	3557.93	3559.67	1.74	4.76	70.46	0.66	11926	1.0	0.0	2.7	3.0	-
4150	22+02.06	540	3557.69	3559.24	1.55	5.33	69.92	0.78	11926	1.0	0.0	2.6	3.0	-
4100	22+97.42	540	3557.40	3559.22	1.82	2.73	156.71	0.43	11926	1.0	0.0	2.8	3.0	-
4000	23+72.68	540	3557.17	3559.07	1.90	3.18	107.98	0.42	11926	1.0	0.0	2.9	3.0	-
3915	24+60.08	540	3556.91	3558.70	1.79	4.61	70.76	0.63	11926	1.0	0.0	2.8	3.0	-
3850	25+27.17	540	3556.71	3558.54	1.83	4.39	79.10	0.58	11926	1.0	0.0	2.8	3.0	-
3770	26+07.18	540	3556.47	3558.28	1.81	4.59	70.17	0.62	2964	1.0	0.0	2.8	3.0	-
3700	26+68.77	540	3556.28	3558.09	1.81	4.56	70.82	0.62	2964	1.0	0.0	2.8	3.0	-
3550	28+15.85	540	3555.83	3557.63	1.80	4.57	70.86	0.62	2964	1.0	0.0	2.8	3.0	-
3400	29+72.06	540	3555.38	3557.15	1.77	4.69	70.60	0.65	2964	1.0	0.0	2.8	3.0	-
3350	30+18.41	540	3555.23	3556.96	1.73	4.80	70.35	0.67	2964	1.0	0.0	2.7	3.0	-
3250	31+22.61	540	3554.92	3556.87	1.95	3.32	94.64	0.43	2964	1.0	0.0	3.0	3.0	-
3150	32+23.12	540	3554.62	3556.58	1.96	4.18	71.76	0.55	2964	1.0	0.0	3.0	3.0	-
3100	32+71.05	540	3554.48	3556.49	2.01	4.07	72.06	0.53	2964	1.0	0.0	3.0	3.0	-
3000	33+36.60	540	3554.40	3556.44	2.04	4.00	72.27	0.52	2964	1.0	0.0	3.0	3.5	-
2990	33+50.00	540	3554.25	3556.36	2.11	3.86	73.81	0.49	2964	1.0	0.0	3.1	3.5	-
2950	33+88.92	540	3554.13	3556.44	2.31	1.92	181.38	0.27	2964	1.0	0.0	3.3	3.5	-
2850	34+88.28	540	3553.83	3556.23	2.40	3.36	73.46	0.40	2964	1.0	0.0	3.4	3.5	-
2825	35+50.00	540	3553.65	3556.15	2.50	3.20	75.00	0.38	2964	1.0	0.0	3.5	3.5	12
2800	36+32.16	720	3553.39	3555.35	1.96	5.58	71.72	0.73	2964	1.0	0.0	3.0	3.5	12

CRR1 - HYDRAULIC MODELS RESULTS SUMMARY AND SUPER-ELEVATION CALCULATIONS

Sta	Plan Sta	ULT Q	FL Elevation	WS Elevation	Depth	Vel	Top Width	Froude #	Radius	Freeboard	Superelevation	Total Depth	Actual Depth	Riprap
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft)			(ft)	(ft)	(ft)	(ft)	(D50- inches)
1100	9+00.00	344	3561.59	3563.50	1.91	2.74	71.45	0.36	0	1.0	0.0	2.9	4.0	-
1050	9+59.36	344	3561.41	3563.46	2.05	2.55	72.28	0.33	0	1.0	0.0	3.1	4.0	-
975	10+26.73	344	3561.21	3563.48	2.27	1.30	155.50	0.17	0	1.0	0.0	3.3	4.0	-
850	11+49.84	344	3560.84	3563.41	2.57	1.98	75.41	0.23	0	1.0	0.0	3.6	4.0	-
700	12+99.60	841	3560.39	3562.87	2.48	5.02	74.89	0.59	0	1.0	0.0	3.5	4.0	-
550	14+50.00	841	3559.94	3562.55	2.61	4.94	75.65	0.56	0	1.0	0.0	3.6	4.0	24 (ROB)
495	15+00.00	841	3559.78	3562.45	2.67	4.81	75.89	0.53	0	1.0	0.0	3.7	4.5	24 (ROB)
400	15+99.60	841	3559.50	3562.32	2.82	4.54	76.92	0.49	0	1.0	0.0	3.8	4.5	24 (ROB)
310	17+00.00	841	3559.20	3562.20	3.00	4.24	78.00	0.45	2964	1.0	0.0	4.0	4.5	24 (ROB)

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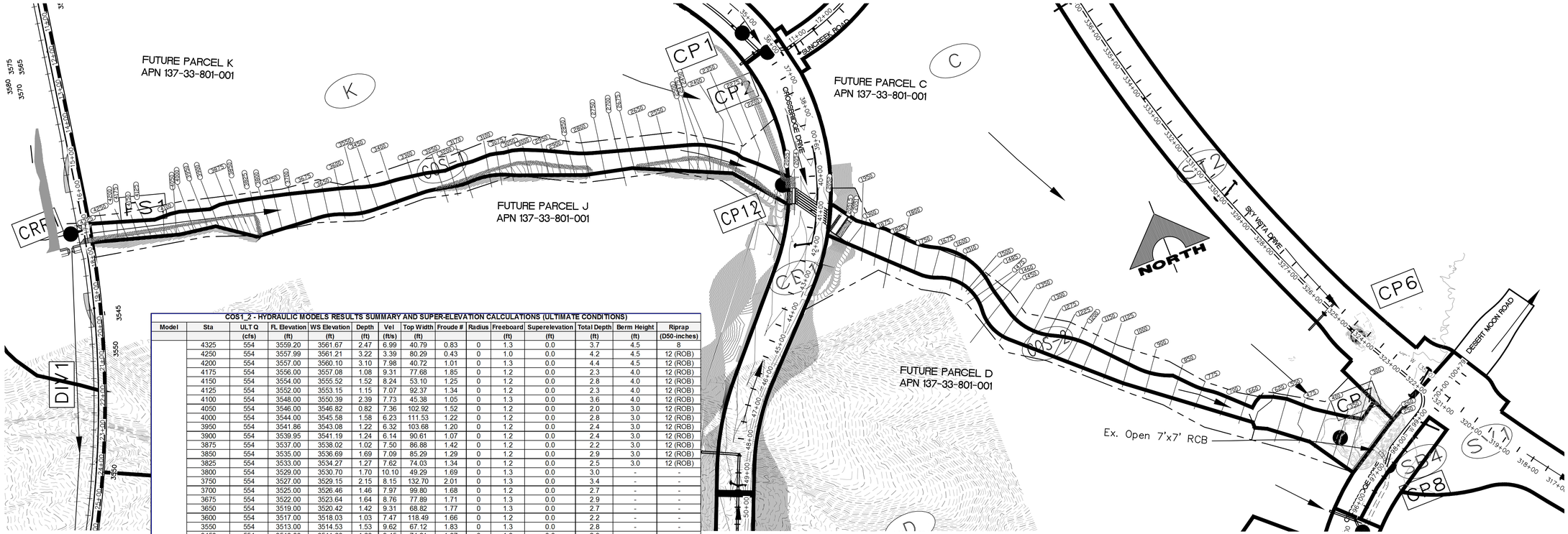
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Michelle Castell

THE HOWARD HUGHES COMPANY, LLC
SUMMERLIN VILLAGE 24
FIGURE 8U3R
HEC-RAS CROSS SECTION EXHIBIT

DRAWING
FIG 8U3R
1 OF 8 SHTS

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COS1_2 - HYDRAULIC MODELS RESULTS SUMMARY AND SUPER-ELEVATION CALCULATIONS (ULTIMATE CONDITIONS)

Model	Sta	ULT Q	FL Elevation	WS Elevation	Depth	Vel	Top Width	Froude #	Radius	Freeboard	Superelevation	Total Depth	Berm Height	Riprap
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft)			(ft)	(ft)	(ft)	(ft)	(D50-inches)
	4325	554	3559.20	3561.67	2.47	6.99	40.79	0.83	0	1.3	0.0	3.7	4.5	8
	4250	554	3557.99	3561.21	3.22	3.39	80.29	0.43	0	1.0	0.0	4.2	4.5	12 (ROB)
	4200	554	3557.00	3560.10	3.10	7.98	40.72	1.01	0	1.3	0.0	4.4	4.5	12 (ROB)
	4175	554	3556.00	3557.08	1.08	9.31	77.68	1.85	0	1.2	0.0	2.3	4.0	12 (ROB)
	4150	554	3554.00	3555.52	1.52	8.24	53.10	1.25	0	1.2	0.0	2.8	4.0	12 (ROB)
	4125	554	3552.00	3553.15	1.15	7.07	92.37	1.34	0	1.2	0.0	2.3	4.0	12 (ROB)
	4100	554	3548.00	3550.39	2.39	7.73	45.38	1.05	0	1.3	0.0	3.6	4.0	12 (ROB)
	4050	554	3546.00	3546.82	0.82	7.36	102.92	1.52	0	1.2	0.0	2.0	3.0	12 (ROB)
	4000	554	3544.00	3545.58	1.58	6.23	111.53	1.22	0	1.2	0.0	2.8	3.0	12 (ROB)
	3950	554	3541.86	3543.08	1.22	6.32	103.68	1.20	0	1.2	0.0	2.4	3.0	12 (ROB)
	3900	554	3539.95	3541.19	1.24	6.14	90.61	1.07	0	1.2	0.0	2.4	3.0	12 (ROB)
	3875	554	3537.00	3538.02	1.02	7.50	86.88	1.42	0	1.2	0.0	2.2	3.0	12 (ROB)
	3850	554	3535.00	3536.69	1.69	7.09	85.29	1.29	0	1.2	0.0	2.9	3.0	12 (ROB)
	3825	554	3533.00	3534.27	1.27	7.62	74.03	1.34	0	1.2	0.0	2.5	3.0	12 (ROB)
	3800	554	3529.00	3530.70	1.70	10.10	49.29	1.69	0	1.3	0.0	3.0	-	-
	3750	554	3527.00	3529.15	2.15	8.15	132.70	2.01	0	1.3	0.0	3.4	-	-
	3700	554	3525.00	3526.46	1.46	7.97	99.80	1.68	0	1.2	0.0	2.7	-	-
	3675	554	3522.00	3523.64	1.64	8.76	77.89	1.71	0	1.3	0.0	2.9	-	-
	3650	554	3519.00	3520.42	1.42	9.31	68.82	1.77	0	1.3	0.0	2.7	-	-
	3600	554	3517.00	3518.03	1.03	7.47	118.49	1.66	0	1.2	0.0	2.2	-	-
	3550	554	3513.00	3514.53	1.53	9.62	67.12	1.83	0	1.3	0.0	2.8	-	-
	3450	554	3510.00	3511.60	1.60	9.45	74.21	1.87	0	1.3	0.0	2.9	-	-
	3400	554	3506.00	3508.11	2.11	8.04	107.10	1.76	0	1.3	0.0	3.4	-	-
	3300	554	3502.00	3503.79	1.79	9.29	66.13	1.72	0	1.3	0.0	3.1	-	-
	3250	554	3499.00	3500.32	1.32	6.74	84.31	1.18	0	1.2	0.0	2.5	3.5	12 (ROB)
COS-1	3200	554	3496.00	3497.56	1.56	7.41	73.19	1.27	0	1.2	0.0	2.8	3.5	12 (ROB)
	3170	554	3493.00	3494.61	1.61	8.62	66.99	1.54	0	1.3	0.0	2.9	3.5	12 (ROB)
	3100	554	3489.00	3490.85	1.85	7.43	74.13	1.28	0	1.2	0.0	3.1	3.5	12 (ROB)
	3075	554	3487.00	3488.89	1.89	8.27	59.05	1.34	0	1.3	0.0	3.1	3.5	12 (ROB)
	3050	554	3485.00	3486.52	1.52	9.09	49.25	1.40	0	1.3	0.0	2.8	3.5	12 (ROB)
	3000	554	3482.00	3483.80	1.80	9.73	37.78	1.32	0	1.3	0.0	3.1	3.5	12 (ROB)
	2950	554	3479.00	3481.41	2.41	9.09	40.26	1.22	0	1.3	0.0	3.7	4.0	12 (ROB)
	2900	554	3477.00	3478.83	1.83	10.51	37.90	1.49	0	1.3	0.0	3.2	4.0	12 (ROB)
	2850	554	3474.00	3475.97	1.97	10.31	43.87	1.58	0	1.3	0.0	3.3	4.0	12 (ROB)
	2800	554	3471.00	3473.13	2.13	9.70	48.72	1.52	0	1.3	0.0	3.4	4.0	12 (ROB)
	2750	554	3469.00	3470.18	1.18	7.23	83.72	1.33	0	1.2	0.0	2.4	-	-
	2700	554	3466.00	3467.14	1.14	8.74	77.76	1.71	0	1.2	0.0	2.4	-	-
	2675	554	3463.85	3465.00	1.15	8.77	86.39	1.78	0	1.2	0.0	2.4	-	-
	2650	554	3461.00	3462.85	1.85	6.97	86.19	1.26	0	1.2	0.0	3.1	3.5	12 (ROB)
	2550	554	3457.75	3459.41	1.66	6.78	100.47	1.32	0	1.2	0.0	2.9	3.5	12 (ROB)
	2500	554	3454.00	3455.22	1.22	5.65	168.34	1.30	0	1.2	0.0	2.4	3.5	12 (ROB)
	2475	554	3452.00	3453.85	1.85	5.83	108.17	1.09	0	1.2	0.0	3.0	3.5	12 (ROB)
	2450	554	3450.00	3452.80	2.80	5.13	143.91	1.04	0	1.2	0.0	4.0	4.0	12 (ROB)
	2400	554	3448.00	3449.22	1.22	6.53	127.86	1.41	0	1.2	0.0	2.4	4.0	12 (ROB)
	2350	554	3445.00	3446.90	1.90	4.77	146.82	0.94	0	1.0	0.0	2.9	4.0	12 (ROB)
	2275	554	3442.00	3443.32	1.32	5.34	142.72	1.10	0	1.1	0.0	2.5	4.0	12 (ROB)
	2200	554	3437.00	3438.45	1.45	4.65	115.47	0.68	0	1.0	0.0	2.4	4.0	12 (ROB)
	2055	554	3434.00	3435.83	1.83	6.42	69.07	1.01	0	1.2	0.0	3.0	4.0	36
	2054	554	3430.00	3433.67	3.67	3.32	56.50	0.31	0	1.0	0.0	4.7	5.0	Concrete
	2053	Culvert				16.26	-			-	-	-	-	
	2052	554	3425.00	3426.14	1.14	11.09	79.15	1.83	0	1.3	0.0	2.4	-	Stilling Basin
	2051.55	554	3422.27	3426.77	4.50	4.73	64.00	0.62	0	1.0	0.0	5.5	-	36
	2051	554	3420.30	3422.66	2.36	7.40	72.69	1.29	0	1.2	0.0	3.6	-	-
	1950	554	3419.00	3420.95	1.95	3.26	184.32	0.60	0	1.0	0.0	2.9	-	-
	1900	554	3417.34	3419.60	2.26	6.32	71.56	1.01	0	1.2	0.0	3.5	-	-
	1875	554	3414.43	3416.61	2.18	8.56	55.31	1.40	0	1.3	0.0	3.5	-	-
	1825	554	3411.57	3413.17	1.60	8.93	60.17	1.55	0	1.3	0.0	2.9	-	-
	1800	554	3409.75	3410.74	0.99	6.15	125.83	1.28	0	1.2	0.0	2.1	-	-
	1750	554	3406.00	3408.23	2.23	7.53	58.19	1.18	200	1.2	0.3	3.7	-	-
	1675	554	3403.00	3404.57	1.57	8.28	64.96	1.44	200	1.2	0.3	3.2	-	-
	1600	554	3399.00	3401.23	2.23	8.73	51.66	1.39	200	1.3	0.3	3.8	-	-
	1510	554	3398.00	3399.35	1.35	9.87	50.97	1.66	200	1.3	0.4	3.0	-	-
	1500	554	3394.00	3394.99	0.99	14.17	44.43	2.66	200	1.4	0.7	3.0	-	-
	1485	554	3393.00	3394.06	1.06	12.53	48.73	2.32	200	1.3	0.6	3.0	-	-
	1475	554	3390.00	3391.90	1.90	11.85	51.85	2.20	200	1.4	0.6	3.8	-	-
	1460	554	3389.00	3391.09	2.09	10.07	54.28	1.76	146	1.3	0.6	4.0	-	-
	1450	554	3388.00	3389.53	1.53	5.12	144.29	1.04	146	1.1	0.4	3.1	-	-
	1350	554	3385.00	3386.67	1.67	7.27	98.87	1.46	146	1.2	0.6	3.4	-	-
	1300	554	3382.00	3383.50	1.50	6.73	113.73	1.39	146	1.2	0.5	3.2	-	-
COS-2	1275	554	3380.00	3381.82	1.82	7.43	88.10	1.42	0	1.2	0.0	3.0	-	-
	1225	554	3378.00	3379.13	1.13	7.29	122.38	1.63	0	1.2	0.0	2.3	-	-
	1200	554	3376.00	3377.03	1.03	7.78	93.74	1.57	0	1.2	0.0	2.2	-	-
	1150	554	3373.00	3374.90	1.90	7.94	74.24	1.44	0	1.2	0.0	3.1	-	-
	1125	554	3369.00	3371.12	2.12	9.77	56.50	1.72	0	1.3	0.0	3.4	-	-
	1000	554	3367.00	3368.49	1.49	10.50	43.31	1.68	0	1.3	0.0	2.8	-	-
	900	554	3364.00	3365.41	1.41	10.84	40.96	1.71	0	1.3	0.0	2.7	-	-
	850	554	3360.00	3361.31	1.31	10.02	55.66	1.77	0	1.3	0.0	2.6	-	-
	775	554	3356.00	3357.57	1.57	9.72	56.29	1.70	0	1.3	0.0	2.9	-	-
	700	554	3353.00	3354.22	1.22	9.74	50.79	1.62	0	1.3	0.0	2.5	-	-
	660	554	3349.00	3350.10	1.10	10.60	60.28	2.01	0	1.3	0.0	2.4	-	-
	620	554	3346.20	3347.00	0.80	9.28	88.71	2.00	0	1.2	0.0	2.0	-	-
	550	554	3340.30	3341.10	0.80	9.83	81.13	2.08	0	1.2	0.0	2.0	-	-
	475	554	3334.40	3335.09	0.69	10.55	89.37	2.42	0	1.2	0.0	1.9	-	-
	400	595	3328.50	3329.33	0.83	9.72	80.82	1.97	0	1.2	0.0	2.1	-	-
	350	595	3322.60	3323.37	0.77	10.70	76.77	2.22	0	1.2	0.0	2.0	-	-
	300	595	3317.00	3323.75	6.75	0.55	216.83	0.04	0	1.0	0.0	7.8	-	-
	260	595	3312.00	3323.75	11.75	0.35	186.00	0.02	0	1.0	0.0	12.8	-	-
	250	595	3312.00	3323.75	11.75	0.35	197.16	0.02	0	1.0	0.0	12.8	-	-

150 0 150 300
SCALE FEET

LEGEND

- COS-1 — DRAINAGE SUBBASIN
- CP1 — CONCENTRATION POINT
- SUBBASIN BOUNDARY
- 850 — HEC-RAS CROSS SECTION

DATE:	
GCW APP	
DATE	
AGEN APP	
DATE	
DESCRIPTION	
REV	DATE

PROJECT NO. 62024-221
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 14:43:41

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM
LAS VEGAS

F:\Projects\600\62024-221\Division\Fcl\Figures\Fig_9U3R.dwg
David Clark

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 24
HEC-RAS CROSS SECTION EXHIBIT (PARCELS COS-1 + COS-2)

DRAWING
FIG 9U3R
2 OF 8 SHTS

cce2436 dwg 070203 jpg

APPENDIX B

Hydraulic Calculations

Mannings N Calculator Using Equation 732 in the HCDDM		
d_{50} (in)	d_{50} (ft)	n
8	0.666667	0.037
12	1	0.040
18	1.5	0.042
24	2	0.044
30	2.5	0.046
36	3	0.047

BOX CULVERT

Crossbridge Drive Sta 41+00 (Inlet)

INPUT

Width of Box	5.00	ft
Height of Box	5.00	ft
Number of Barrels	6	
Length	100.00	ft
Slope	4.36	%
Manning's 'n'	0.015	
Flow "Q"	554	cfs
Entrance Coef.	0.35	
Tail Water	0	ft

INLET

45d WWall	3.40	ft
Sq. Edge	3.63	ft
Beveled	3.46	ft
Tapered	3.32	ft

OUTLET

Head Water	N/A	ft
Critical	5.00	ft
Velocity	3.69	ft/s

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Channel Protection Sizing Using Equation 718

Known:

d50=	Riprap size (in)	36
Sg=	Specific Gravity of Rock (typ=2.5)	2.5
s=	Longitudinal Channel Slope (ft/ft)	0.040

$Vel=3*(d_{50}^{0.5})*(Sg-1)/(S^{0.17})$

Solve For:

Max Allowable Velocity= 13.47 fps

USBR TYPE IV STILLING BASIN

Flow Characteristics				Chute Blocks			Sill	Basin			Total	
US Depth (d_1,ft)	US Froude # (F_1,ft)	DS Depth[1] (d_2,ft)	T.W.[2] (ft)	Height (ft)	Width (ft)	Spacing (ft)	Height (ft)	L_j/d_2[3] (ft/ft)	Length (ft)	Width (ft)	Cells (#)	Width (ft)
1.1	2.9	3.9	4.3	2.2	1.1	2.7	1.4	5.2	20	9	6	54

[1] From equation $d_2/d_1=0.5*((1+8F^2)^{0.5}-1)$

[2] Tailwater Depth, from equation $T.W./d_2=1.1$

[3] Basin length to downstream depth ratio, from Figure 9-39

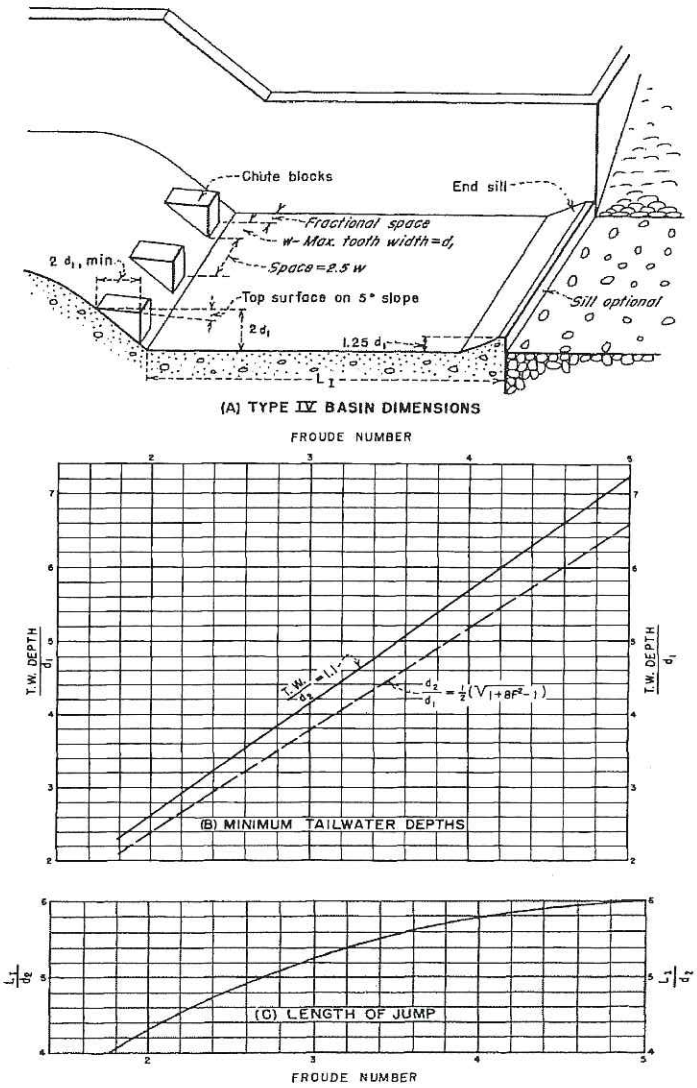


Figure 9-39.—Stilling basin characteristics for Froude numbers between 2.5 and 4.5. 288-D-2425.

Design information taken from Design of Small Dams by the US Bureau of Reclamation, pg. 390.

Worksheet for (6) - 5x5 Crossbridge Drive Sta 41+00

Project Description

Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.015	
Channel Slope	4.36000	%
Height	5.00	ft
Bottom Width	5.00	ft
Discharge	93.00	ft^3/s

Results

Normal Depth	1.08	ft
Flow Area	5.42	ft^2
Wetted Perimeter	7.17	ft
Hydraulic Radius	0.76	ft
Top Width	5.00	ft
Critical Depth	2.21	ft
Percent Full	21.7	%
Critical Slope	0.00585	ft/ft
Velocity	17.16	ft/s
Velocity Head	4.58	ft
Specific Energy	5.66	ft
Froude Number	2.91	
Discharge Full	600.06	ft^3/s
Slope Full	1.81511	ft/ft
Flow Type	Supercritical	

GVF Input Data

Downstream Depth	0.00	ft
Length	0.00	ft
Number Of Steps	0	

GVF Output Data

Upstream Depth	0.00	ft
Profile Description		
Profile Headloss	0.00	ft
Average End Depth Over Rise	0.00	%
Normal Depth Over Rise	21.67	%
Downstream Velocity	Infinity	ft/s

Worksheet for (6) - 5x5 Crossbridge Drive Sta 41+00

GVF Output Data

Upstream Velocity	Infinity	ft/s
Normal Depth	1.08	ft
Critical Depth	2.21	ft
Channel Slope	4.36000	%
Critical Slope	0.00585	ft/ft

Cross Section for (6) - 5x5 Crossbridge Drive Sta 41+00

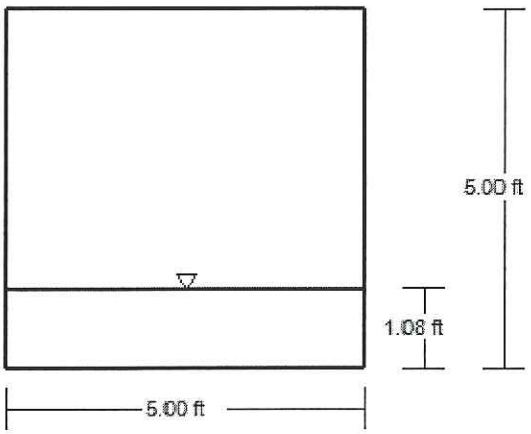
Project Description

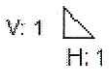
Friction Method	Manning Formula
Solve For	Normal Depth

Input Data

Roughness Coefficient	0.015	
Channel Slope	4.36000	%
Normal Depth	1.08	ft
Height	5.00	ft
Bottom Width	5.00	ft
Discharge	93.00	ft³/s

Cross Section Image



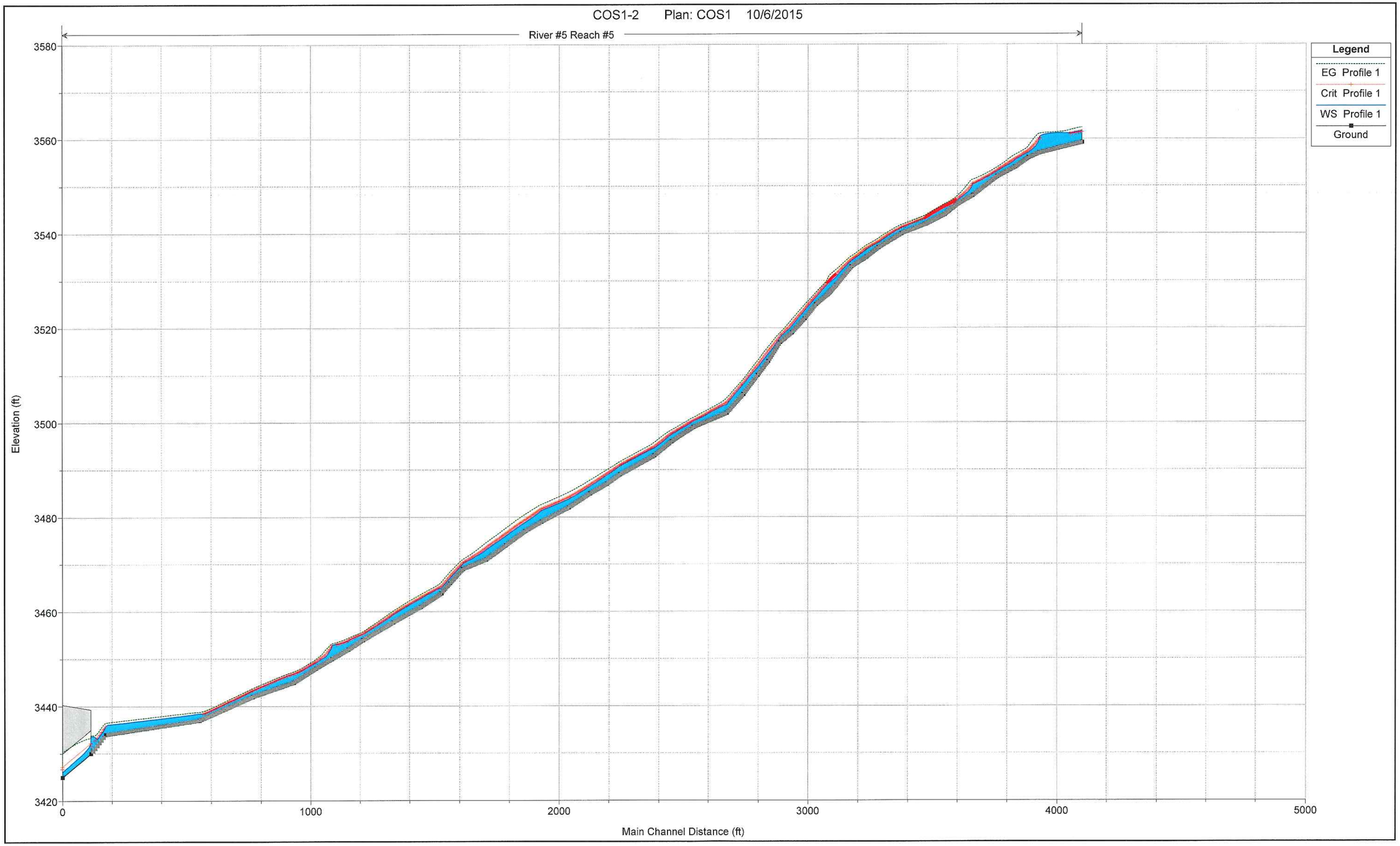


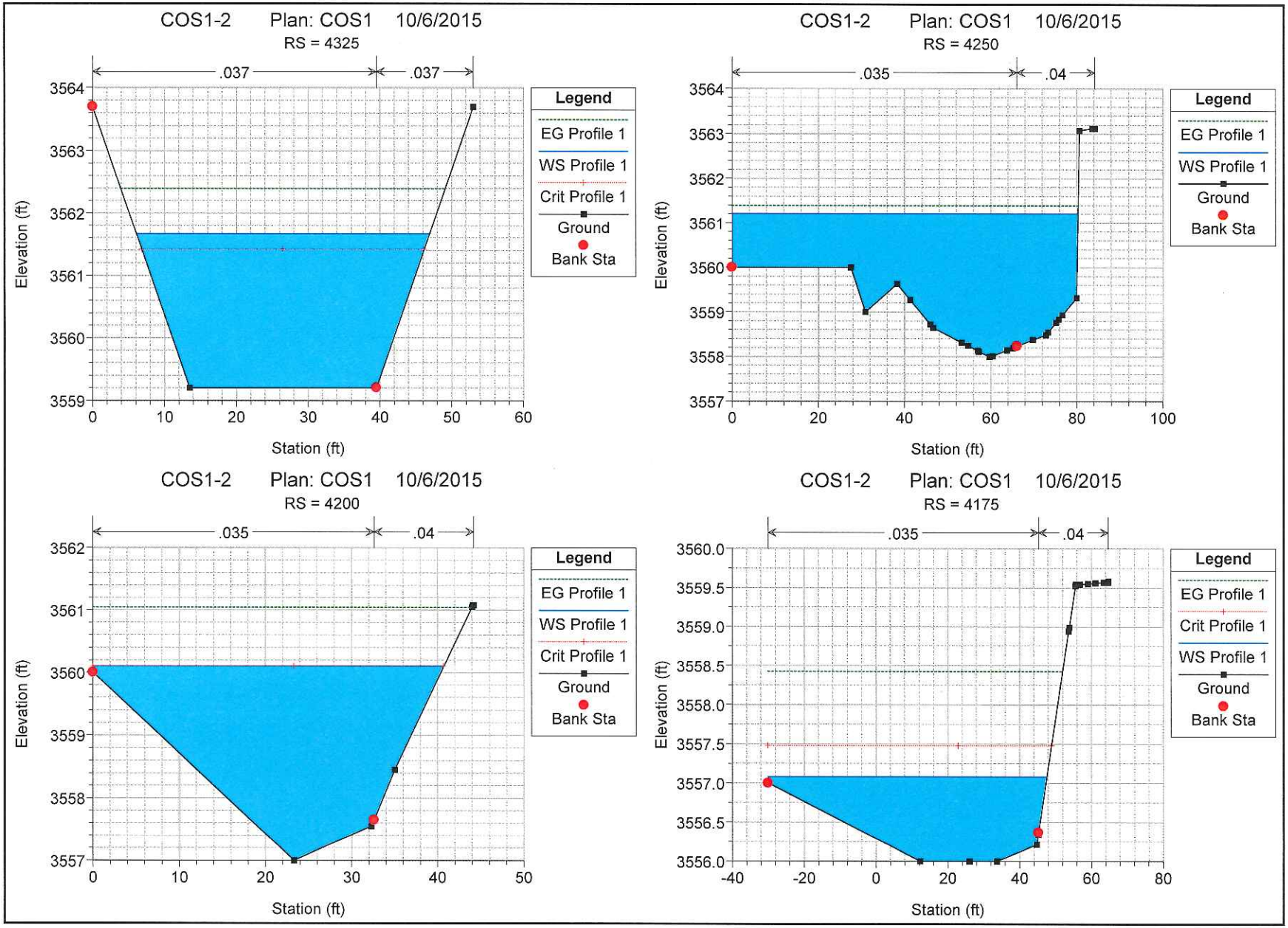
HEC-RAS Plan: COS1 River: River #5 Reach: Reach #5 Profile: Profile 1

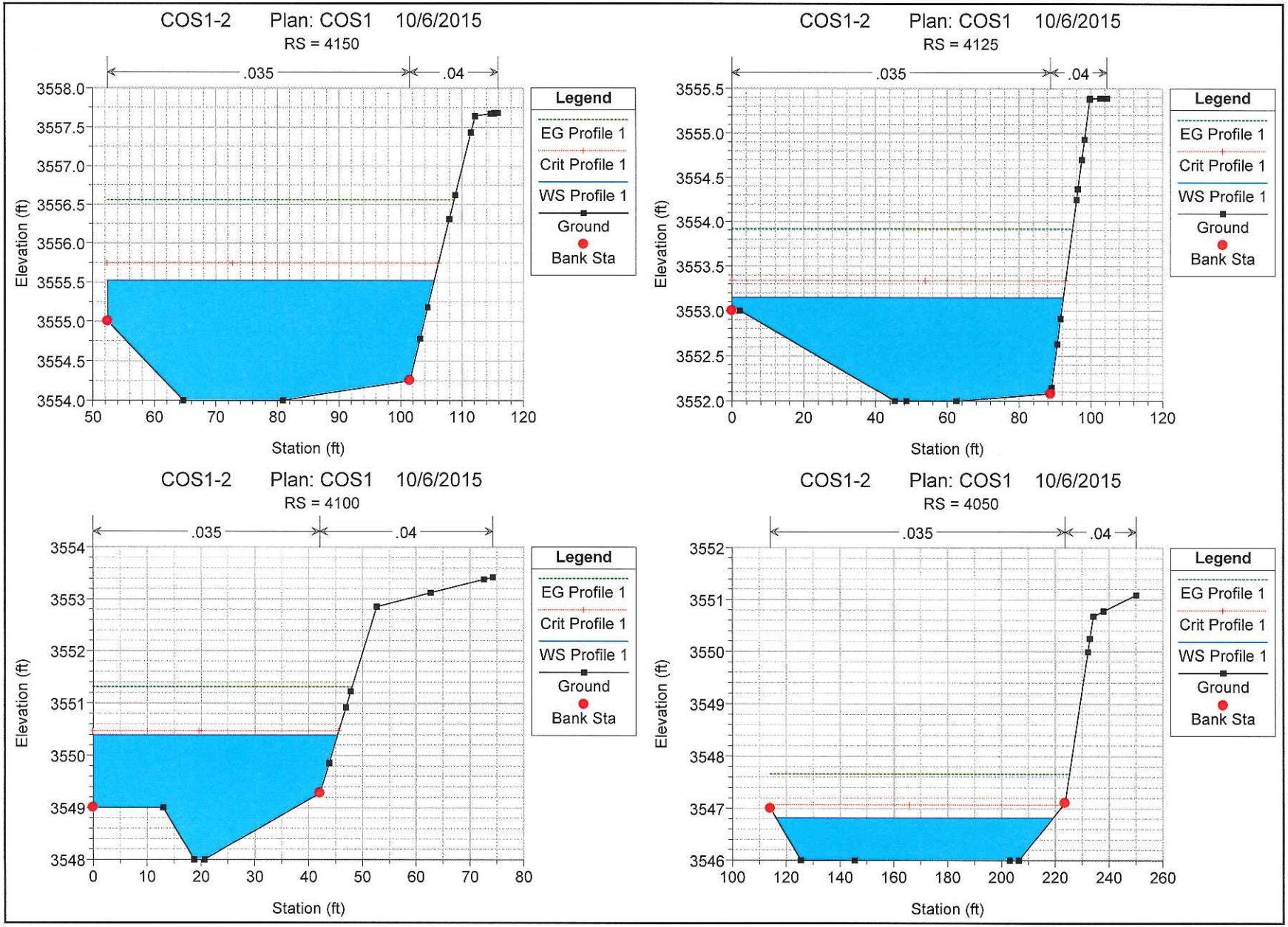
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach #5	4325	Profile 1	554.00	3559.20	3561.67	3561.41	3562.39	0.010803	6.99	82.34	40.79	0.83
Reach #5	4250	Profile 1	554.00	3557.99	3561.21		3561.39	0.002730	3.39	163.69	80.29	0.43
Reach #5	4200	Profile 1	554.00	3557.00	3560.10	3560.10	3561.04	0.014727	7.98	73.12	40.72	1.01
Reach #5	4175	Profile 1	554.00	3556.00	3557.08	3557.48	3558.42	0.066607	9.31	59.93	77.68	1.85
Reach #5	4150	Profile 1	554.00	3554.00	3555.52	3555.74	3556.56	0.025882	8.24	68.41	53.10	1.25
Reach #5	4125	Profile 1	554.00	3552.00	3553.15	3553.33	3553.92	0.033488	7.07	79.11	92.37	1.34
Reach #5	4100	Profile 1	554.00	3548.00	3550.39	3550.46	3551.31	0.017363	7.73	72.70	45.38	1.05
Reach #5	4050	Profile 1	554.00	3546.00	3546.82	3547.06	3547.66	0.045670	7.36	75.26	102.92	1.52
Reach #5	4000	Profile 1	554.00	3544.00	3545.58	3545.70	3546.18	0.028578	6.23	89.58	111.53	1.22
Reach #5	3950	Profile 1	554.00	3541.86	3543.08	3543.19	3543.69	0.026954	6.32	88.48	103.68	1.20
Reach #5	3900	Profile 1	554.00	3539.95	3541.19	3541.24	3541.77	0.020546	6.14	90.59	90.61	1.07
Reach #5	3875	Profile 1	554.00	3537.00	3538.02	3538.27	3538.89	0.037485	7.50	74.55	86.88	1.42
Reach #5	3850	Profile 1	554.00	3535.00	3536.69	3536.85	3537.45	0.030546	7.09	79.10	85.29	1.29
Reach #5	3825	Profile 1	554.00	3533.00	3534.27	3534.48	3535.17	0.032313	7.62	73.07	74.03	1.34
Reach #5	3800	Profile 1	554.00	3529.00	3530.70	3531.31	3532.28	0.049439	10.10	54.88	49.29	1.69
Reach #5	3750	Profile 1	554.00	3527.00	3529.15	3529.45	3530.18	0.090505	8.15	67.95	132.70	2.01
Reach #5	3700	Profile 1	554.00	3525.00	3526.46	3526.75	3527.45	0.057452	7.97	69.48	99.80	1.68
Reach #5	3675	Profile 1	554.00	3522.00	3523.64	3524.02	3524.84	0.056616	8.76	63.24	77.89	1.71
Reach #5	3650	Profile 1	554.00	3519.00	3520.42	3520.83	3521.77	0.058551	9.31	59.49	68.82	1.77
Reach #5	3600	Profile 1	554.00	3517.00	3518.03	3518.28	3518.89	0.057851	7.47	74.21	118.49	1.66
Reach #5	3550	Profile 1	554.00	3513.00	3514.53	3515.14	3515.97	0.063701	9.62	57.57	67.12	1.83
Reach #5	3450	Profile 1	554.00	3510.00	3511.60	3512.13	3512.99	0.068511	9.45	58.60	74.21	1.87
Reach #5	3400	Profile 1	554.00	3506.00	3508.11	3508.40	3509.11	0.065090	8.04	68.95	107.10	1.76
Reach #5	3300	Profile 1	554.00	3502.00	3503.79	3504.25	3505.13	0.055613	9.29	59.63	66.13	1.72
Reach #5	3250	Profile 1	554.00	3499.00	3500.32	3500.44	3501.01	0.025105	6.74	83.44	84.31	1.18
Reach #5	3200	Profile 1	554.00	3496.00	3497.56	3497.75	3498.40	0.028328	7.41	75.91	73.19	1.27
Reach #5	3170	Profile 1	554.00	3493.00	3494.61	3494.94	3495.76	0.042775	8.62	64.45	66.99	1.54
Reach #5	3100	Profile 1	554.00	3489.00	3490.85	3491.04	3491.70	0.029294	7.43	75.55	74.13	1.28
Reach #5	3075	Profile 1	554.00	3487.00	3488.89	3489.16	3489.95	0.030824	8.27	67.51	59.05	1.34
Reach #5	3050	Profile 1	554.00	3485.00	3486.52	3486.86	3487.79	0.032474	9.09	61.87	49.25	1.40
Reach #5	3000	Profile 1	554.00	3482.00	3483.80	3484.19	3485.22	0.026575	9.73	59.23	37.78	1.32
Reach #5	2950	Profile 1	554.00	3479.00	3481.41	3481.72	3482.62	0.022922	9.09	64.04	40.26	1.22
Reach #5	2900	Profile 1	554.00	3477.00	3478.83	3479.33	3480.50	0.034673	10.51	54.43	37.90	1.49
Reach #5	2850	Profile 1	554.00	3474.00	3475.97	3476.46	3477.58	0.040710	10.31	55.12	43.87	1.58
Reach #5	2800	Profile 1	554.00	3471.00	3473.13	3473.56	3474.56	0.038158	9.70	58.64	48.72	1.52
Reach #5	2750	Profile 1	554.00	3469.00	3470.18	3470.38	3471.00	0.032806	7.23	76.58	83.72	1.33
Reach #5	2700	Profile 1	554.00	3466.00	3467.14	3467.51	3468.32	0.055858	8.74	63.38	77.76	1.71
Reach #5	2675	Profile 1	554.00	3463.85	3465.00	3465.37	3466.17	0.061808	8.77	64.07	86.39	1.78
Reach #5	2650	Profile 1	554.00	3461.00	3462.85	3463.00	3463.59	0.029079	6.97	80.44	86.19	1.26
Reach #5	2550	Profile 1	554.00	3457.75	3459.41	3459.56	3460.11	0.033238	6.78	82.38	100.47	1.32
Reach #5	2500	Profile 1	554.00	3454.00	3455.22	3455.33	3455.71	0.036236	5.65	98.15	168.34	1.30
Reach #5	2475	Profile 1	554.00	3452.00	3453.85	3453.90	3454.38	0.022384	5.83	95.02	108.17	1.09
Reach #5	2450	Profile 1	554.00	3450.00	3452.80	3452.80	3453.21	0.021164	5.13	108.50	143.91	1.04
Reach #5	2400	Profile 1	554.00	3448.00	3449.22	3449.40	3449.88	0.041141	6.53	84.80	127.86	1.41
Reach #5	2350	Profile 1	554.00	3445.00	3446.90	3446.86	3447.25	0.017090	4.77	116.39	146.82	0.94
Reach #5	2275	Profile 1	554.00	3442.00	3443.32	3443.35	3443.76	0.023792	5.34	104.28	142.72	1.10
Reach #5	2200	Profile 1	554.00	3437.00	3438.45		3438.75	0.003746	4.65	137.28	115.47	0.68
Reach #5	2055	Profile 1	554.00	3434.00	3435.83	3435.83	3436.47	0.030900	6.42	86.23	69.07	1.01
Reach #5	2054	Profile 1	554.00	3430.00	3433.67	3431.67	3433.84	0.000165	3.32	166.85	56.50	0.31
Reach #5	2053		Culvert									
Reach #5	2052	Profile 1	554.00	3425.00	3426.14	3426.71	3428.05	0.007912	11.09	49.98	79.15	1.83

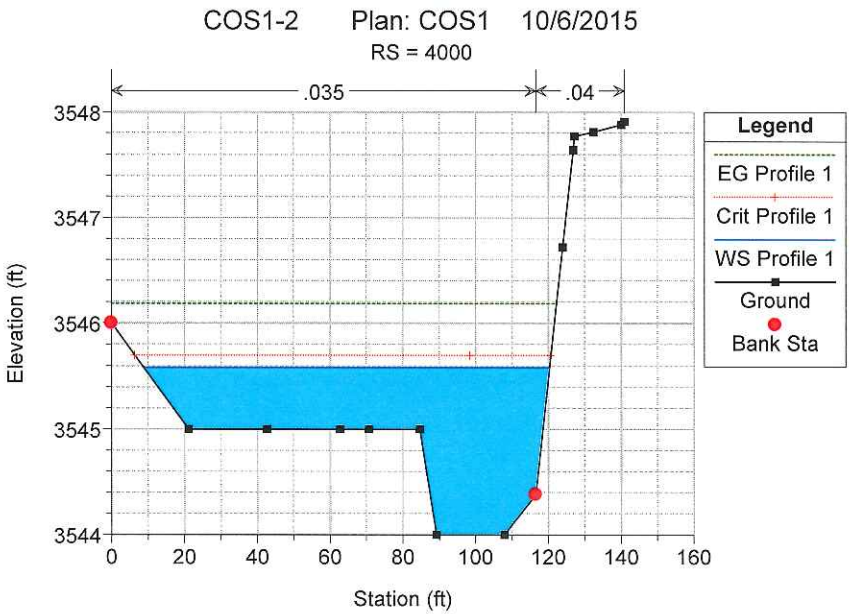
Plan: COS1 River #5 Reach #5 RS: 2053 Culv Group: Crossbridge Profile: Profile 1

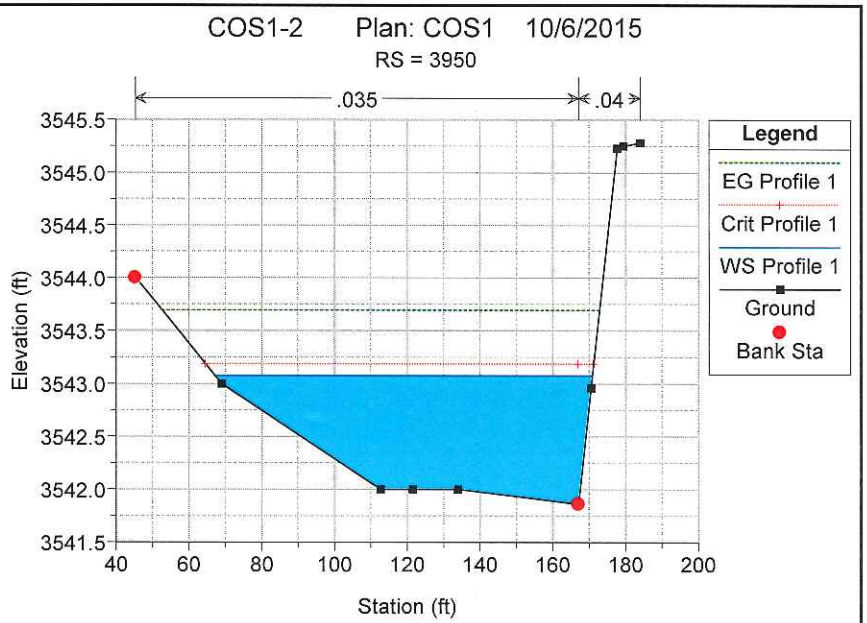
Q Culv Group (cfs)	554.00	Culv Full Len (ft)	
# Barrels	6	Culv Vel US (ft/s)	8.41
Q Barrel (cfs)	92.33	Culv Vel DS (ft/s)	16.26
E.G. US. (ft)	3433.84	Culv Inv El Up (ft)	3430.00
W.S. US. (ft)	3433.67	Culv Inv El Dn (ft)	3425.00
E.G. DS (ft)	3427.56	Culv Frctn Ls (ft)	3.05
W.S. DS (ft)	3426.71	Culv Exit Loss (ft)	2.69
Delta EG (ft)	6.29	Culv Entr Loss (ft)	0.55
Delta WS (ft)	6.95	Q Weir (cfs)	
E.G. IC (ft)	3433.49	Weir Sta Lft (ft)	
E.G. OC (ft)	3433.84	Weir Sta Rgt (ft)	
Culvert Control	Outlet	Weir Submerg	
Culv WS Inlet (ft)	3432.20	Weir Max Depth (ft)	
Culv WS Outlet (ft)	3426.14	Weir Avg Depth (ft)	
Culv Nml Depth (ft)	1.08	Weir Flow Area (sq ft)	
Culv Crt Depth (ft)	2.20	Min El Weir Flow (ft)	3441.01

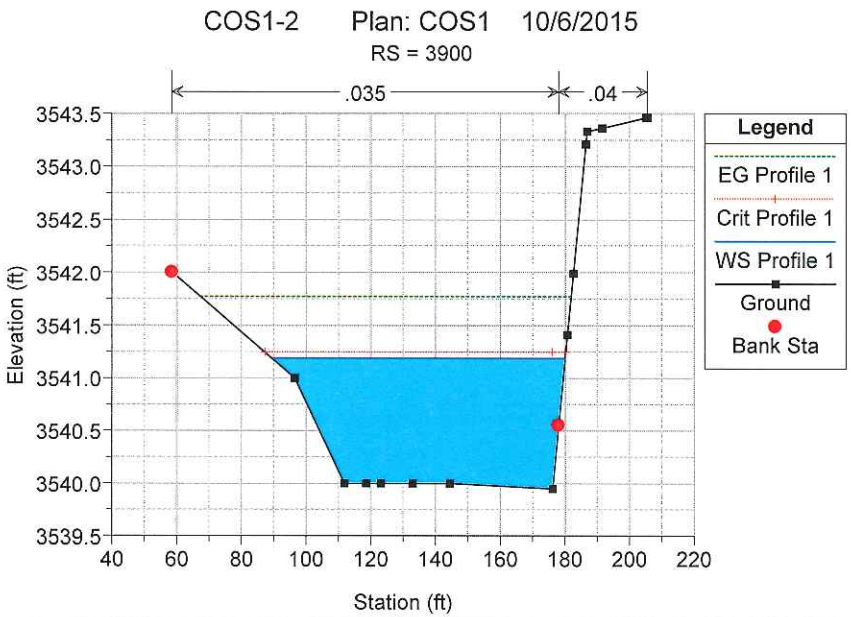

COS1-2 Plan: COS1 10/6/2015
River #5 Reach #5
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Elevation (ft)
3580
3560
3540
3520
3500
3480
3460
3440
3420
0
1000
2000
3000
4000
5000
Main Channel Distance (ft)

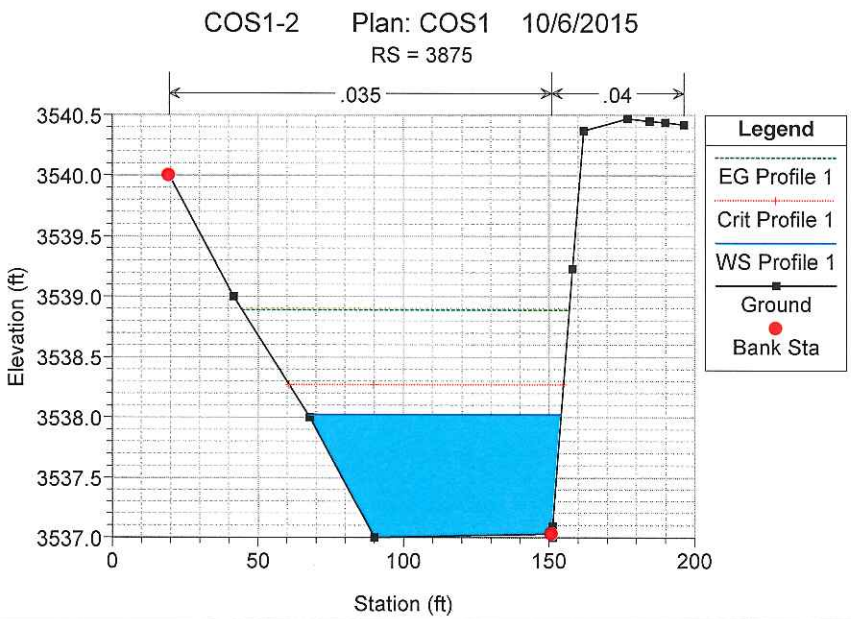

COS1-2 Plan: COS1 10/6/2015
RS = 4325
.037
.037
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 4250
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 4200
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 4175
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

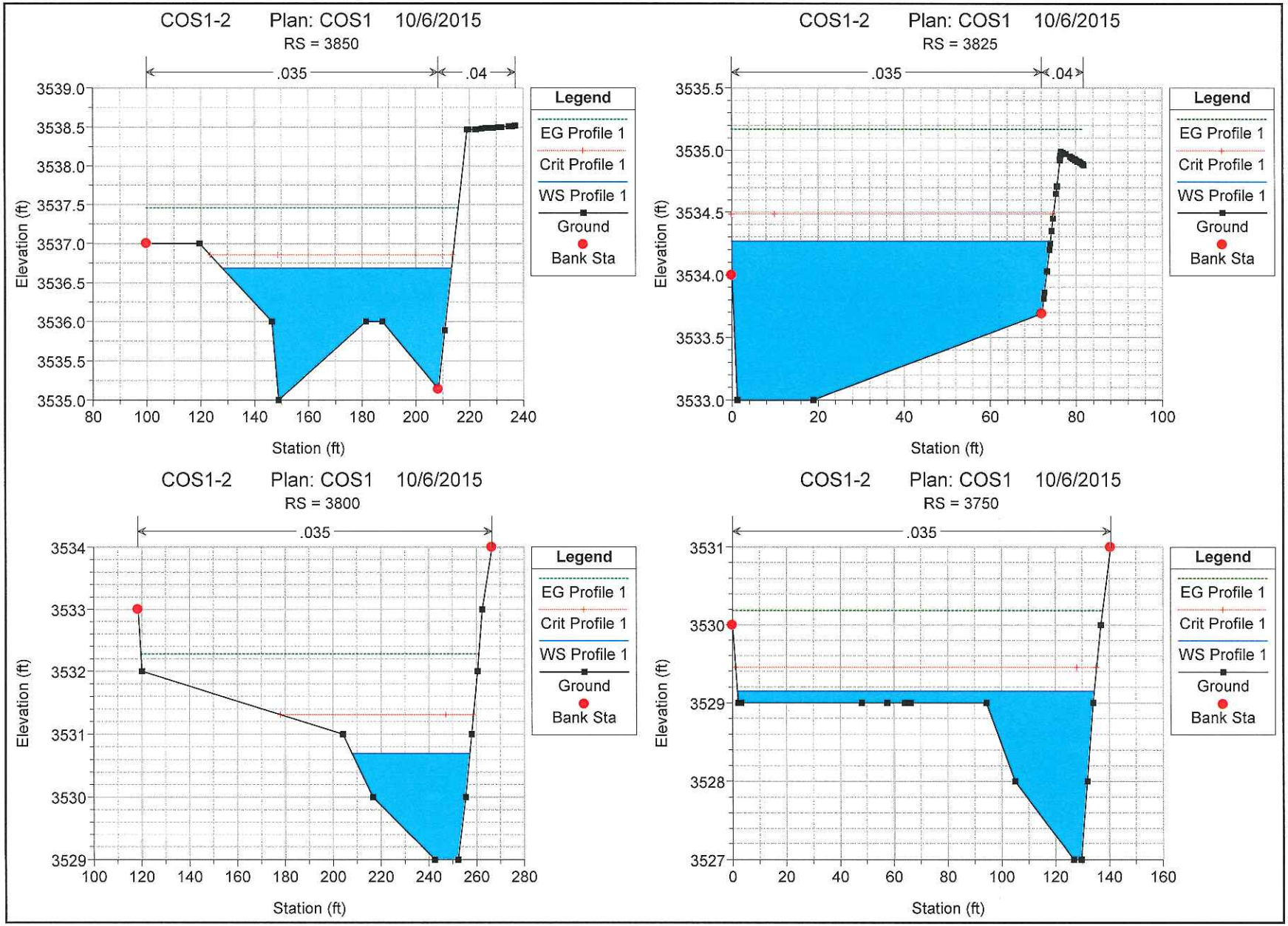

COS1-2 Plan: COS1 10/6/2015
RS = 4150
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 4125
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 4100
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 4050
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

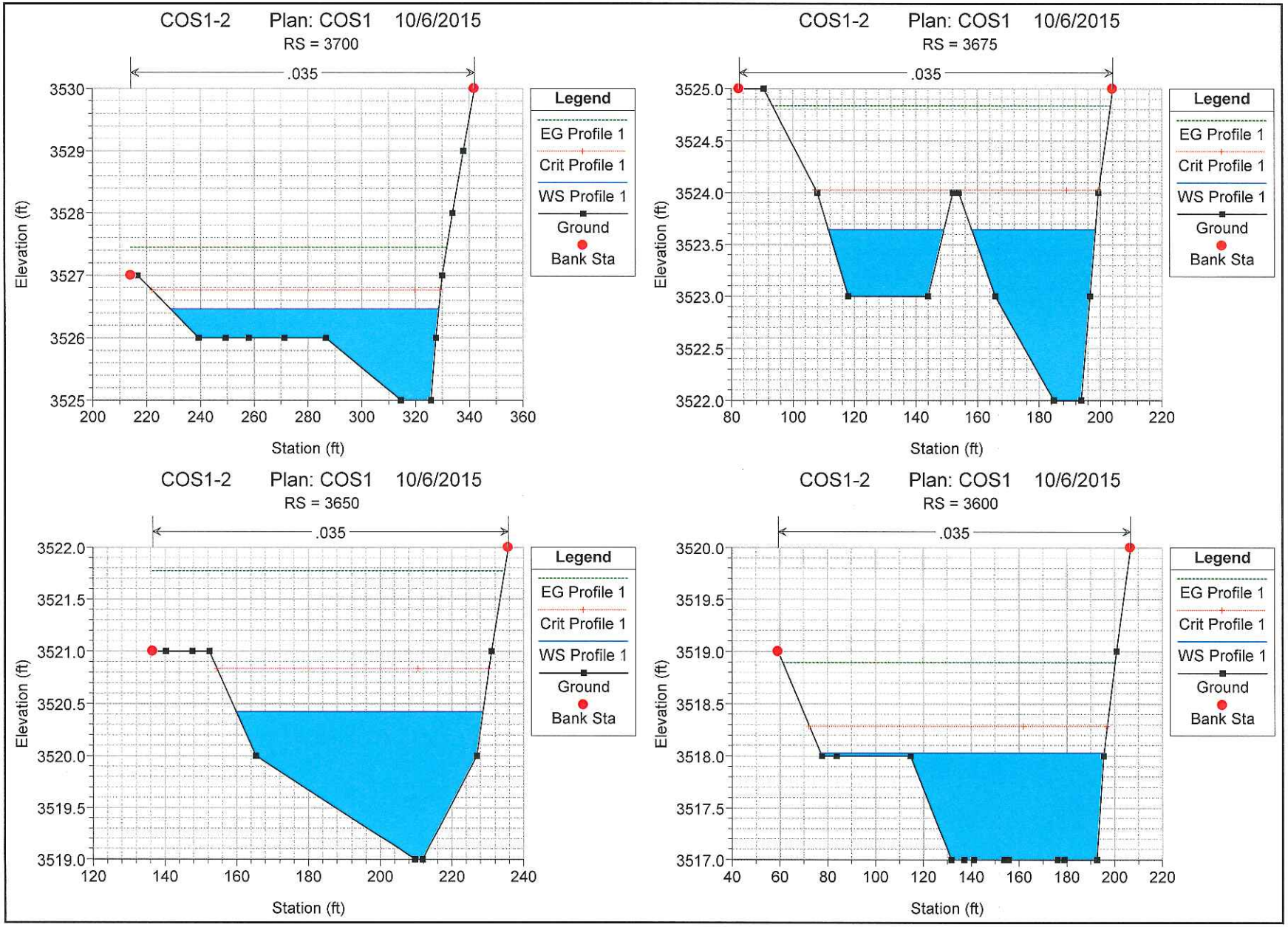

COS1-2 Plan: COS1 10/6/2015
RS = 4000
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

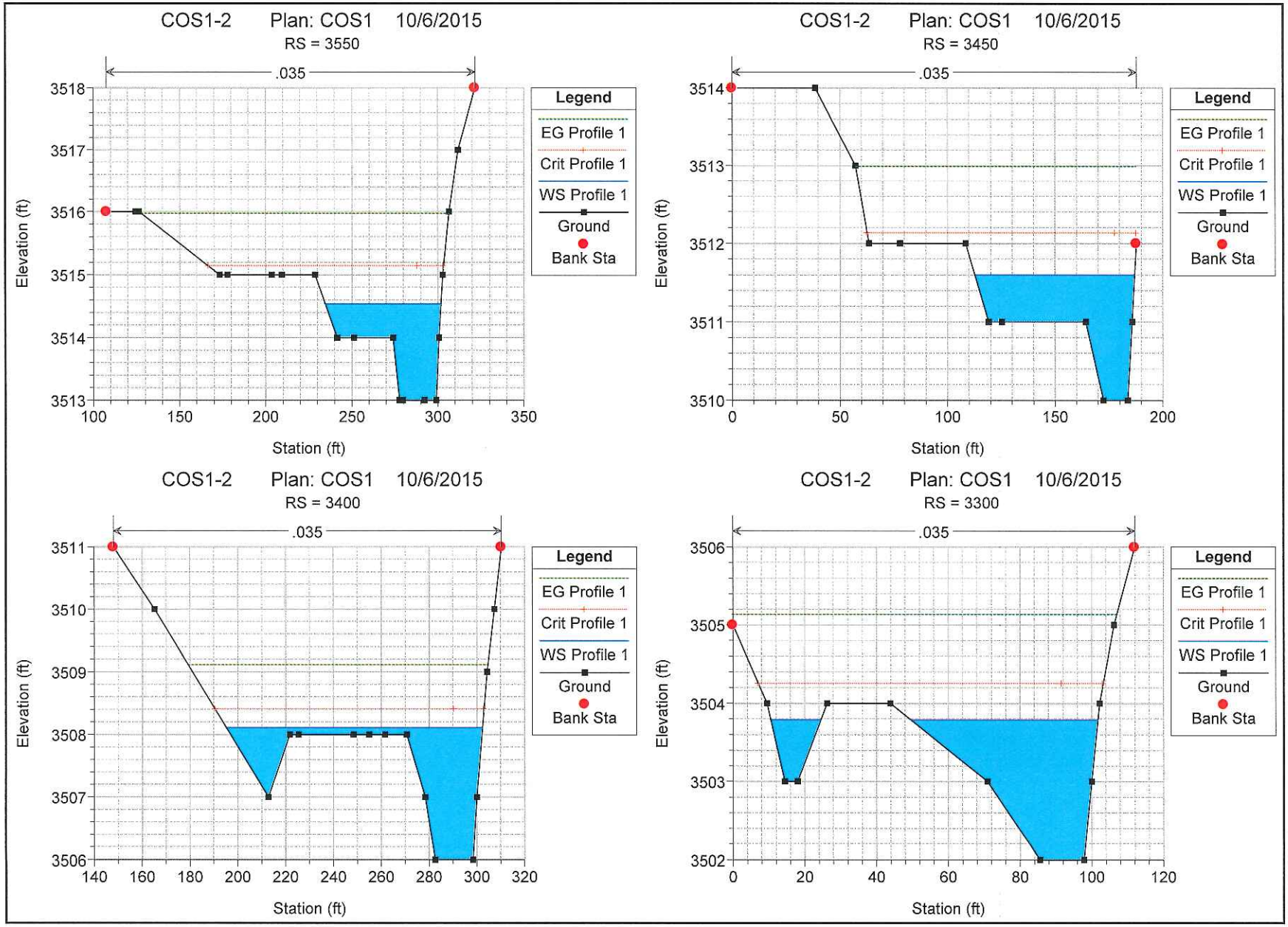

COS1-2 Plan: COS1 10/6/2015
RS = 3950
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

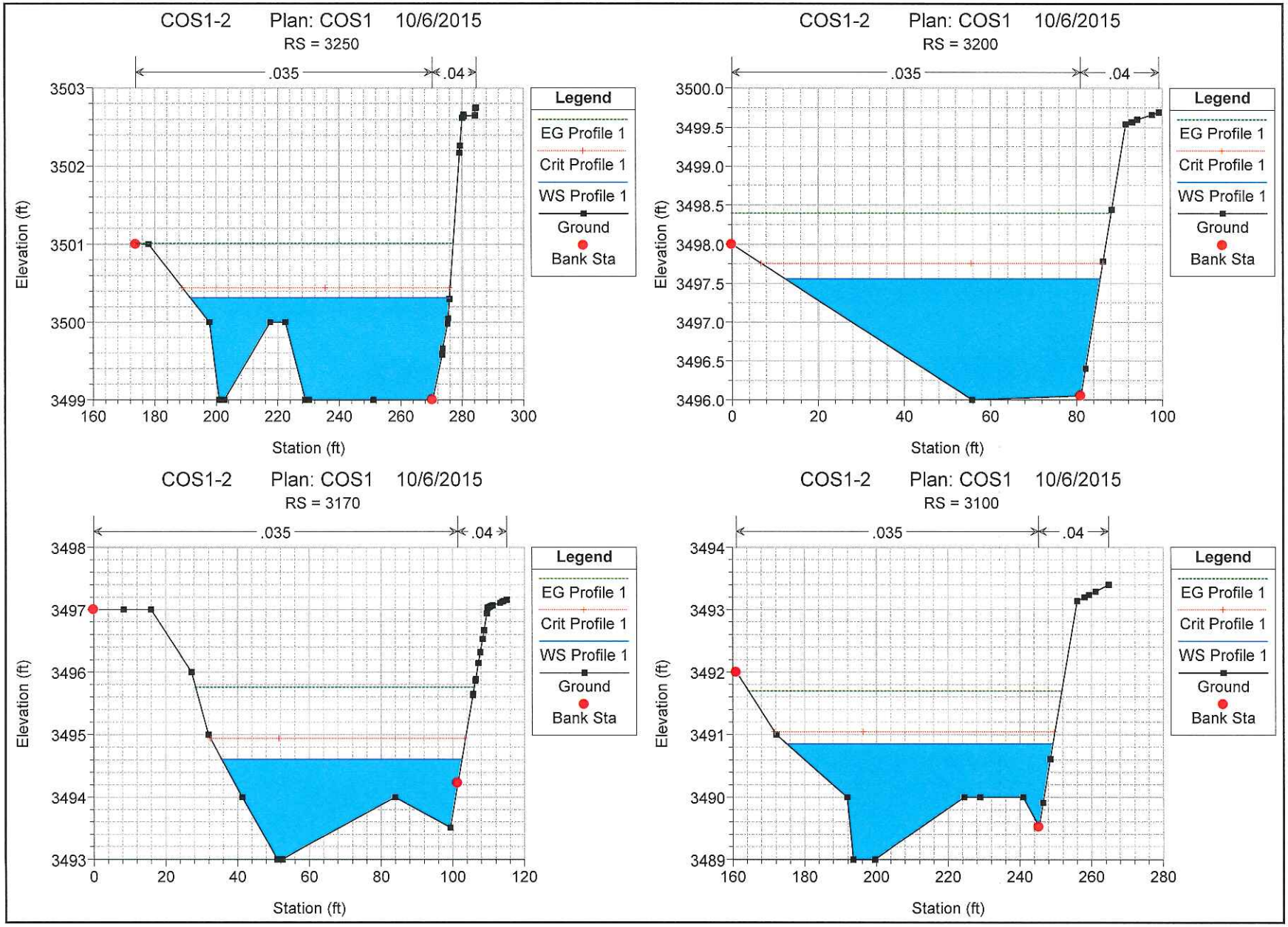

COS1-2 Plan: COS1 10/6/2015
RS = 3900
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

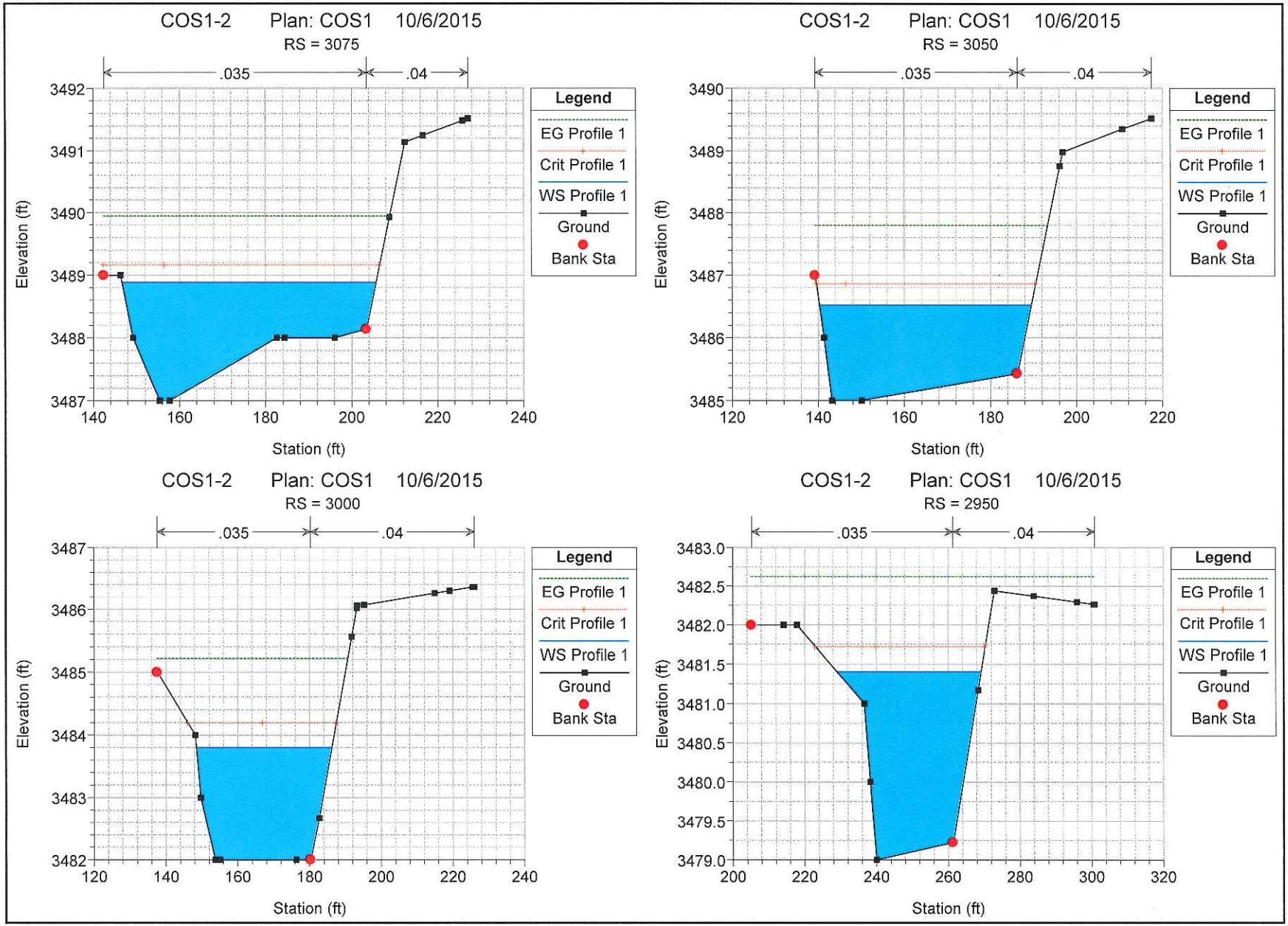

COS1-2 Plan: COS1 10/6/2015
RS = 3875
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

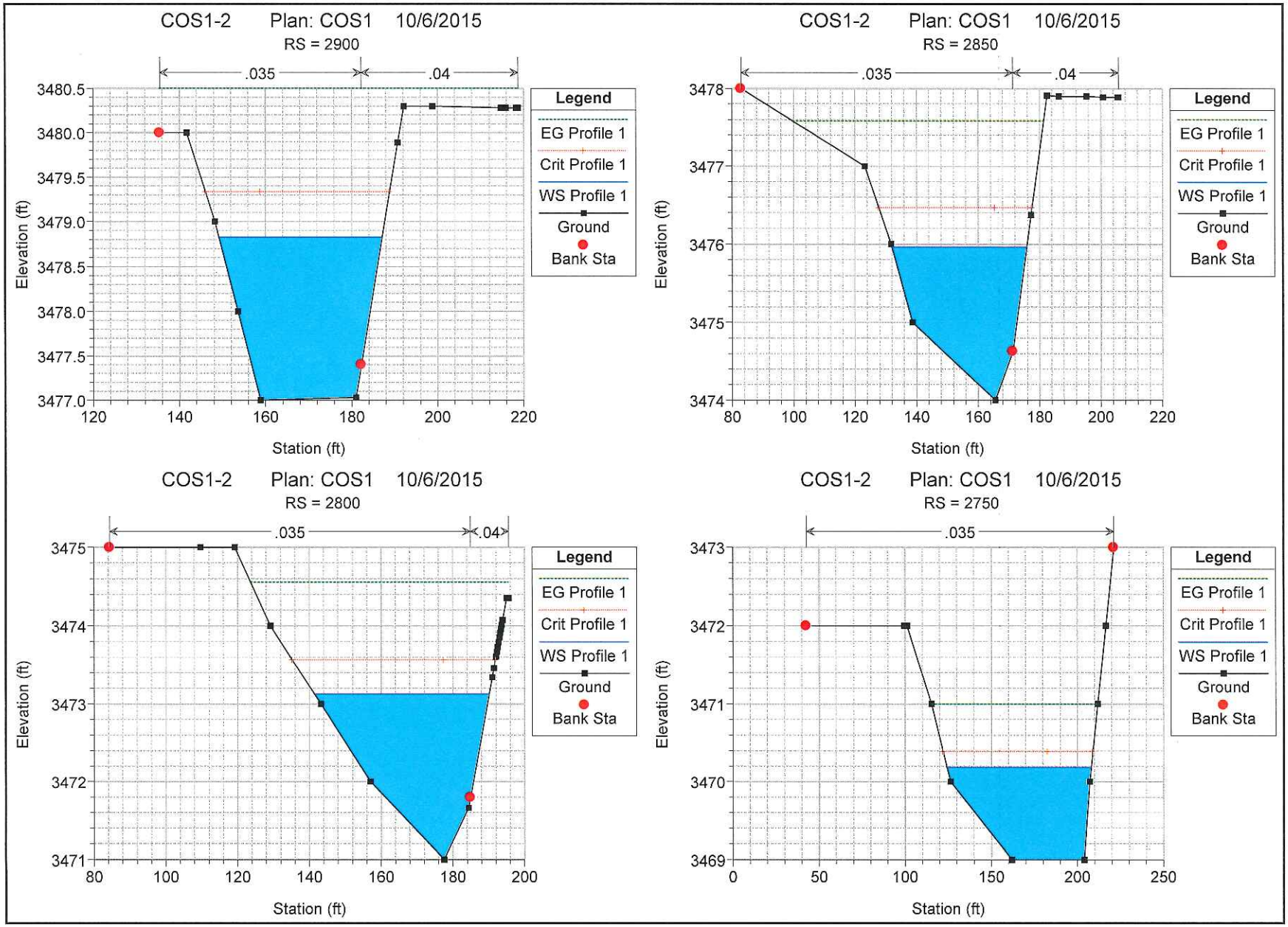

COS1-2 Plan: COS1 10/6/2015
RS = 3850
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3825
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3800
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3750
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

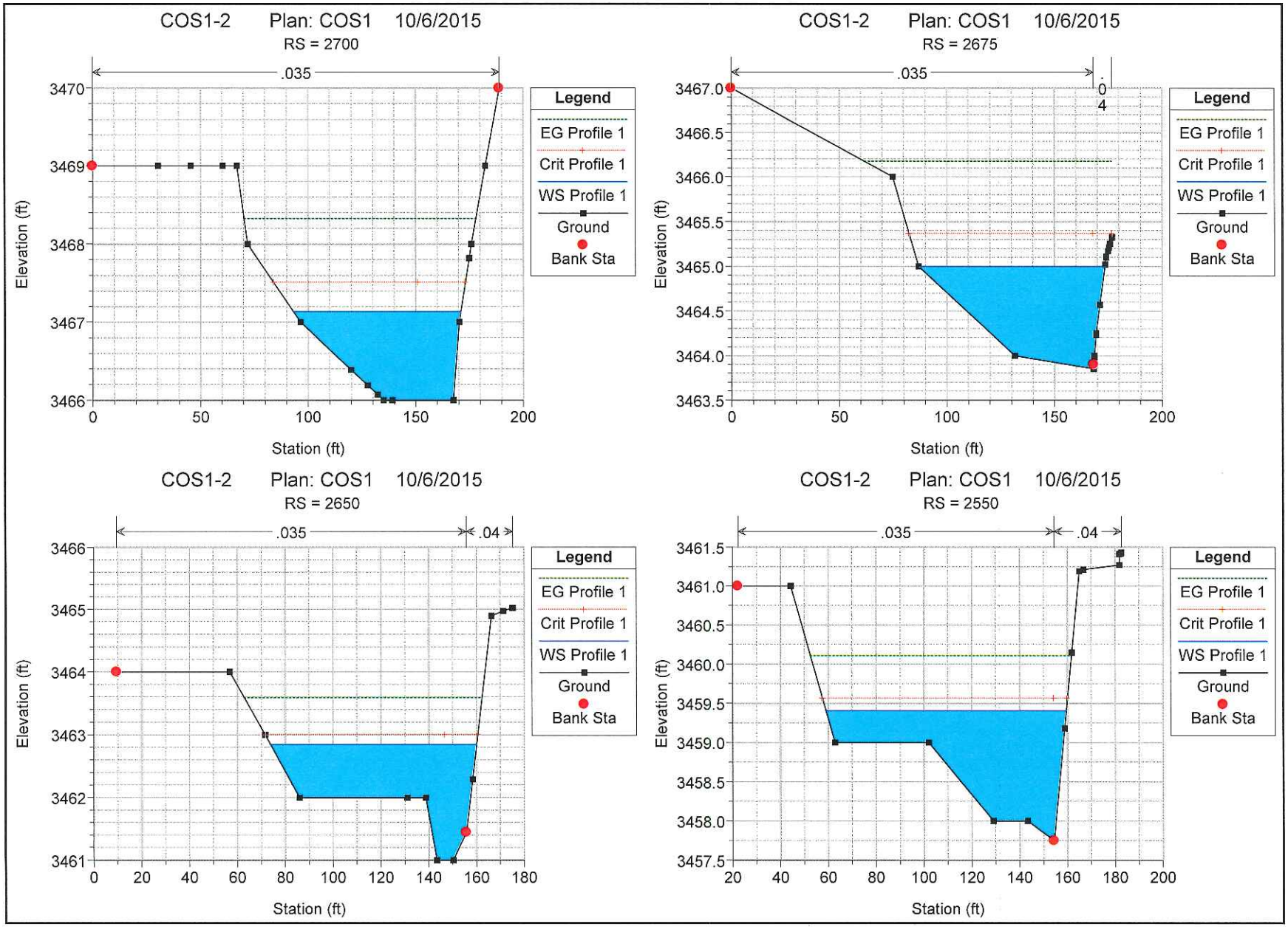

COS1-2 Plan: COS1 10/6/2015
RS = 3700
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1 10/6/2015
RS = 3675
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1 10/6/2015
RS = 3650
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1 10/6/2015
RS = 3600
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

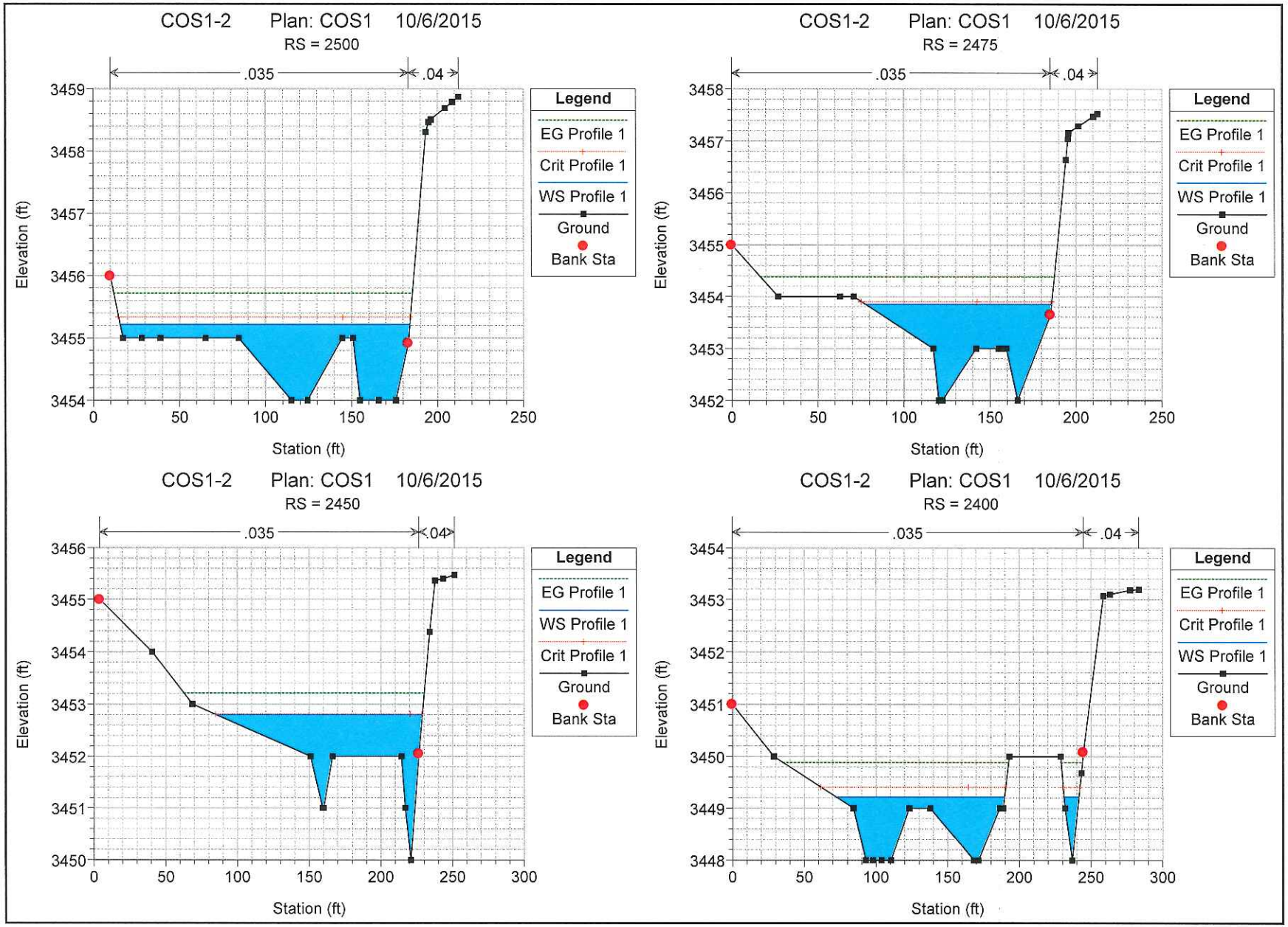

COS1-2 Plan: COS1 10/6/2015
RS = 3550
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3450
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3400
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3300
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

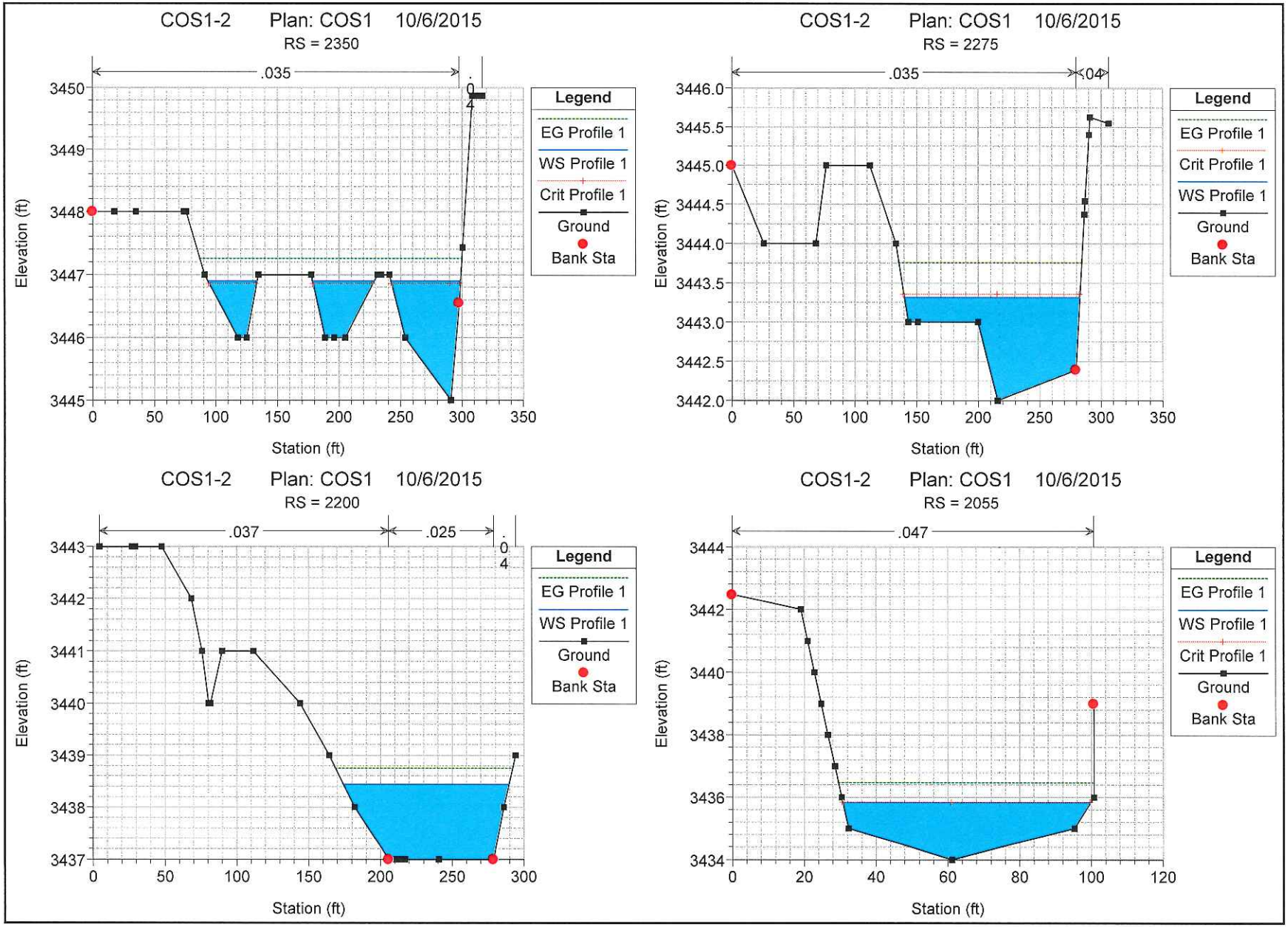

COS1-2 Plan: COS1 10/6/2015
RS = 3250
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3200
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3170
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3100
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

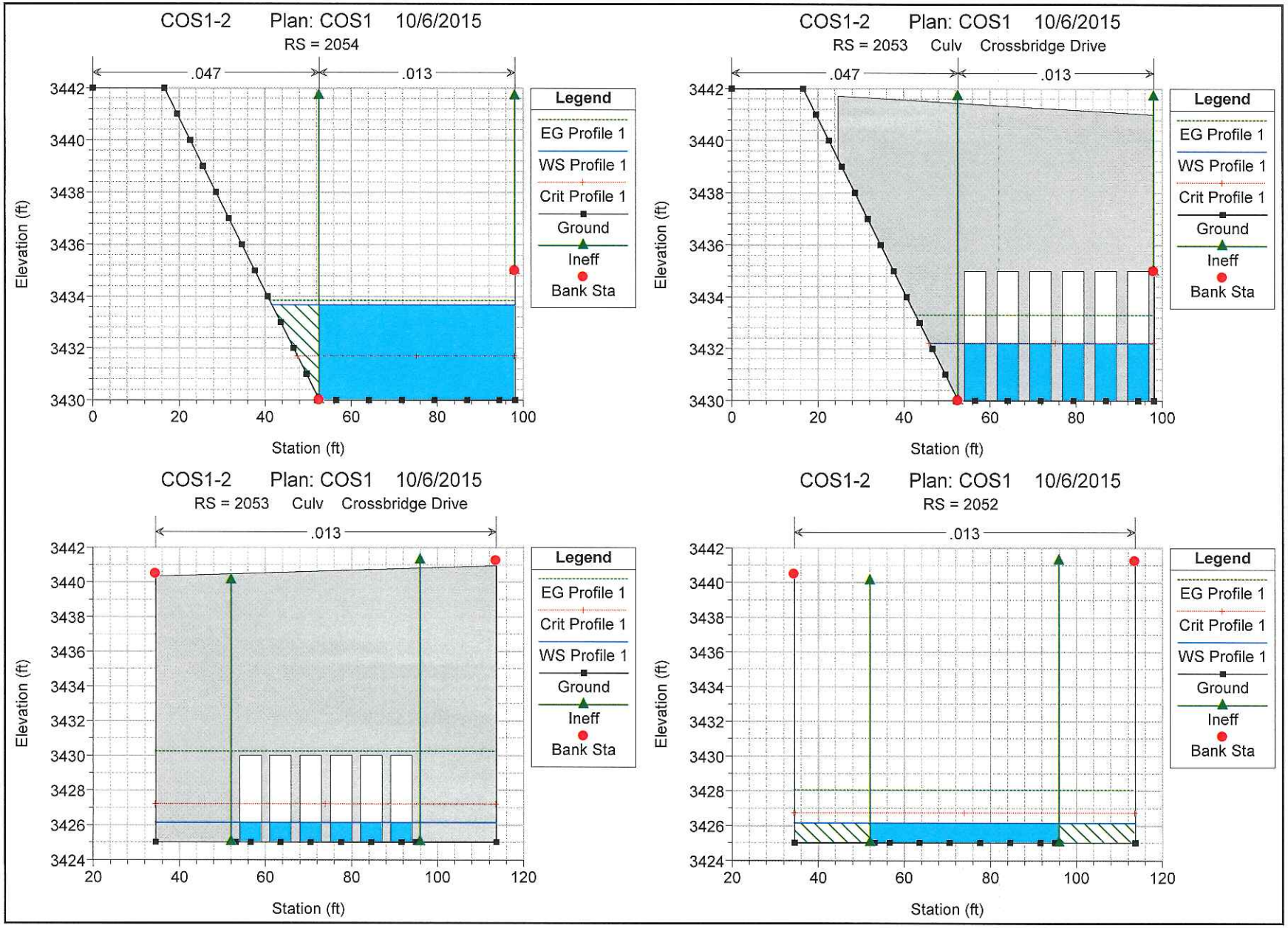

COS1-2 Plan: COS1 10/6/2015
RS = 3075
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3050
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 3000
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2950
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta


COS1-2 Plan: COS1 10/6/2015
RS = 2900
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2850
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2800
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2750
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta


COS1-2 Plan: COS1 10/6/2015
RS = 2700
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2675
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2650
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2550
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta


COS1-2 Plan: COS1 10/6/2015
RS = 2500
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2475
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2450
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2400
.035
.04
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

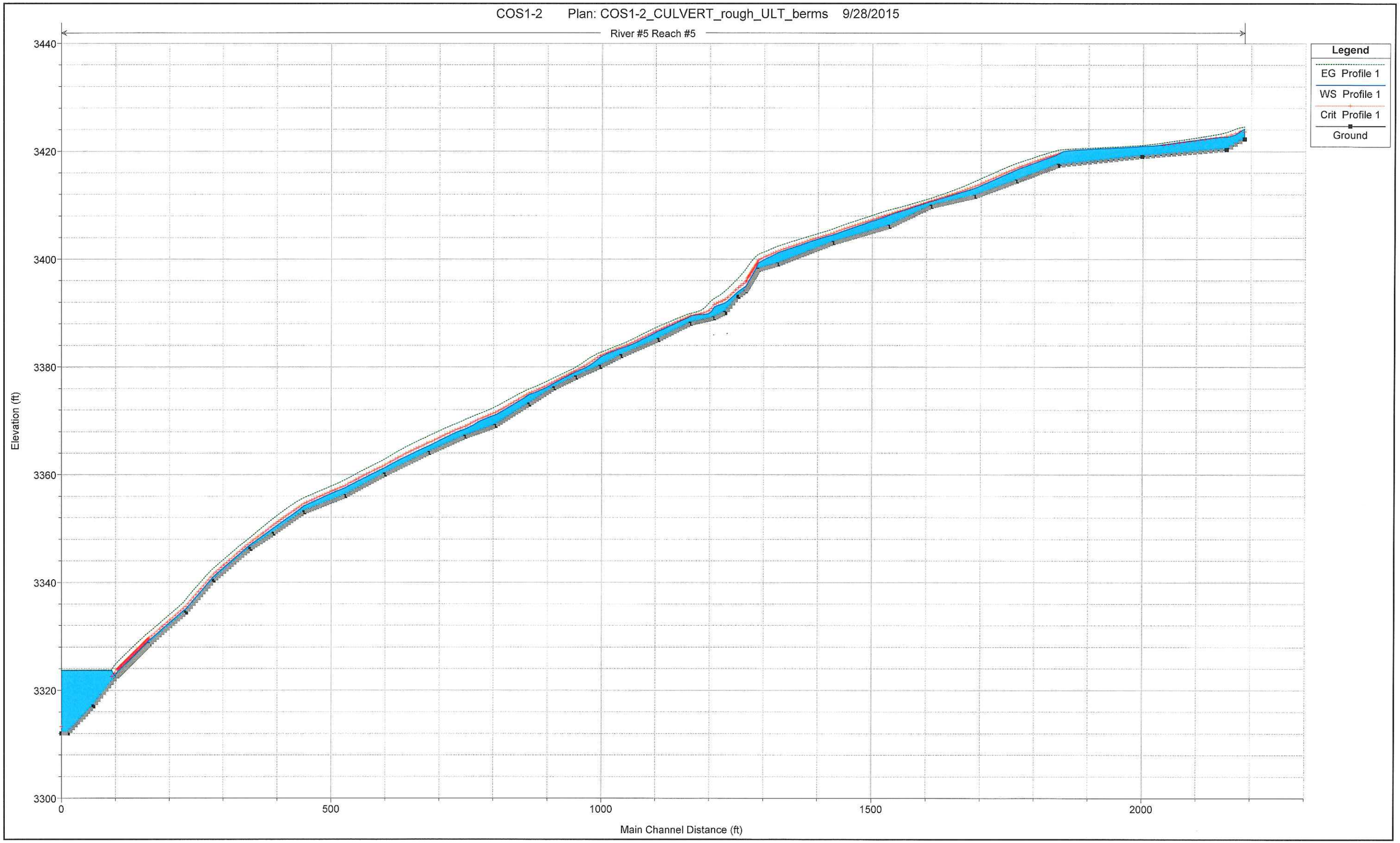

COS1-2 Plan: COS1 10/6/2015
RS = 2350
.035
.04
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1 10/6/2015
RS = 2275
.035
.04
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1 10/6/2015
RS = 2200
.037
.025
.04
Legend
EG Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1 10/6/2015
RS = 2055
.047
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

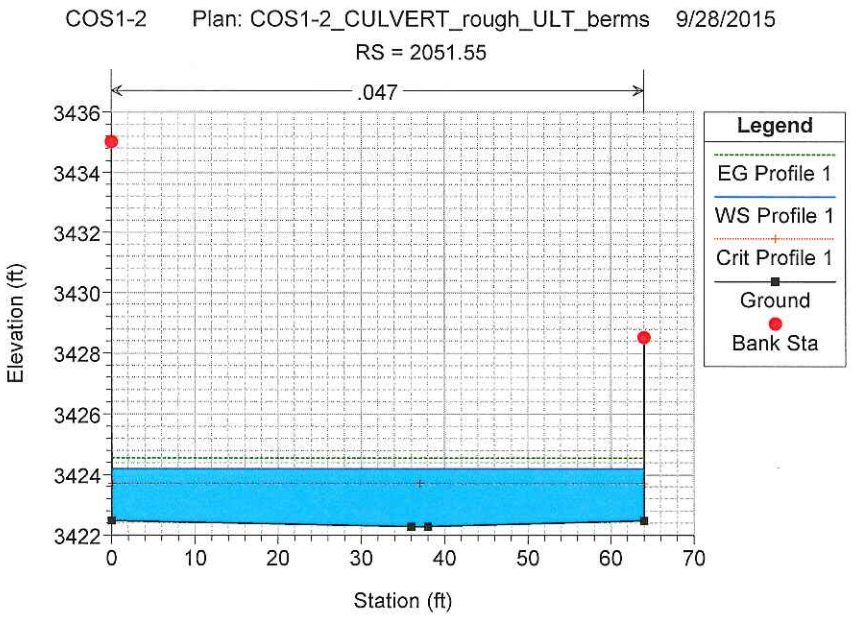

COS1-2 Plan: COS1 10/6/2015
RS = 2054
.047
.013
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Ineff
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2053 Culv Crossbridge Drive
.047
.013
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Ineff
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2053 Culv Crossbridge Drive
.013
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Ineff
Bank Sta
COS1-2 Plan: COS1 10/6/2015
RS = 2052
.013
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Ineff
Bank Sta

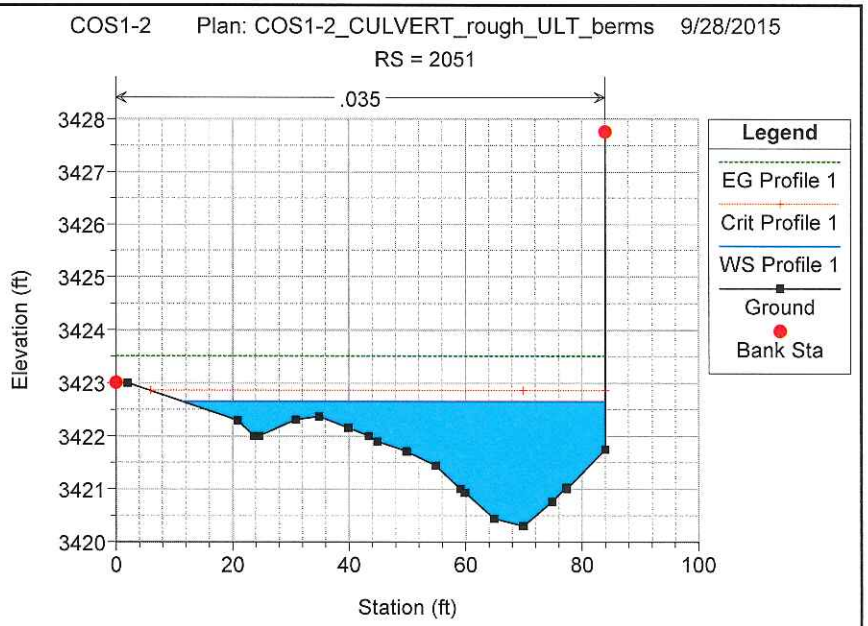
HEC-RAS Plan: ult_berms River: River #5 Reach: Reach #5 Profile: Profile 1

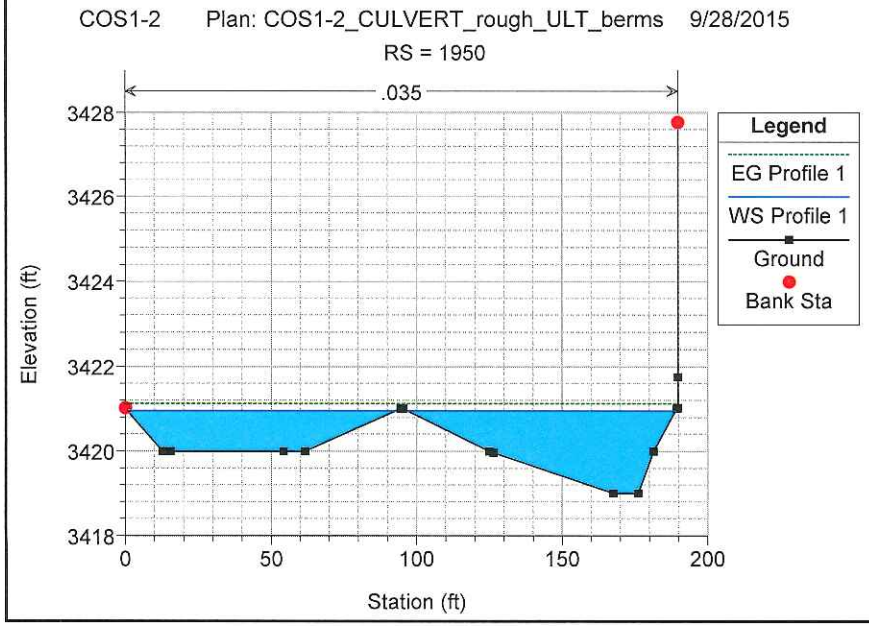
Reach	River Sta	Profile	Q Total	Min Ch El	W.S. Elev	Crit W.S.	E.G. Elev	E.G. Slope	Vel Chnl	Flow Area	Top Width	Froude # Chl
			(cfs)	(ft)	(ft)	(ft)	(ft)	(ft/ft)	(ft/s)	(sq ft)	(ft)	
Reach #5	2051.55	Profile 1	554.00	3422.27	3424.20	3423.69	3424.54	0.010733	4.73	117.10	64.00	0.62
Reach #5	2051	Profile 1	554.00	3420.30	3422.66	3422.85	3423.51	0.029808	7.40	74.86	72.69	1.29
Reach #5	1950	Profile 1	554.00	3419.00	3420.95		3421.12	0.006556	3.26	170.14	184.32	0.60
Reach #5	1900	Profile 1	554.00	3417.34	3419.60	3419.60	3420.21	0.016994	6.32	87.71	71.56	1.01
Reach #5	1875	Profile 1	554.00	3414.43	3416.61	3416.89	3417.75	0.033815	8.56	64.70	55.31	1.40
Reach #5	1825	Profile 1	554.00	3411.57	3413.17	3413.52	3414.41	0.043295	8.93	62.02	60.17	1.55
Reach #5	1800	Profile 1	554.00	3409.75	3410.74	3410.86	3411.32	0.032772	6.15	90.13	125.83	1.28
Reach #5	1750	Profile 1	554.00	3406.00	3408.23	3408.37	3409.11	0.023312	7.53	73.62	58.19	1.18
Reach #5	1675	Profile 1	554.00	3403.00	3404.57	3404.87	3405.63	0.036681	8.28	66.91	64.96	1.44
Reach #5	1600	Profile 1	554.00	3399.00	3401.23	3401.54	3402.41	0.032428	8.73	63.46	51.66	1.39
Reach #5	1510	Profile 1	554.00	3398.00	3399.35	3399.83	3400.86	0.047865	9.87	56.15	50.97	1.66
Reach #5	1500	Profile 1	554.00	3394.00	3394.99	3395.83	3398.11	0.132886	14.17	39.11	44.43	2.66
Reach #5	1485	Profile 1	554.00	3393.00	3394.06	3394.79	3396.50	0.099707	12.53	44.21	48.73	2.32
Reach #5	1475	Profile 1	554.00	3390.00	3391.90	3392.53	3394.08	0.090252	11.85	46.75	51.85	2.20
Reach #5	1460	Profile 1	554.00	3389.00	3391.09	3391.59	3392.67	0.055866	10.07	55.00	54.28	1.76
Reach #5	1450	Profile 1	554.00	3388.00	3389.53	3389.54	3389.94	0.021516	5.12	108.12	144.29	1.04
Reach #5	1350	Profile 1	554.00	3385.00	3386.67	3386.89	3387.49	0.042199	7.27	76.19	98.87	1.46
Reach #5	1300	Profile 1	554.00	3382.00	3383.50	3383.69	3384.20	0.038795	6.73	82.30	113.73	1.39
Reach #5	1275	Profile 1	554.00	3380.00	3381.82	3382.12	3382.67	0.038415	7.43	74.60	88.10	1.42
Reach #5	1225	Profile 1	554.00	3378.00	3379.13	3379.36	3379.95	0.056113	7.29	75.95	122.38	1.63
Reach #5	1200	Profile 1	554.00	3376.00	3377.03	3377.30	3377.97	0.048719	7.78	71.21	93.74	1.57
Reach #5	1150	Profile 1	554.00	3373.00	3374.90	3375.16	3375.88	0.038143	7.94	69.81	74.24	1.44
Reach #5	1125	Profile 1	554.00	3369.00	3371.12	3371.55	3372.60	0.053430	9.77	56.70	56.50	1.72
Reach #5	1000	Profile 1	554.00	3367.00	3368.49	3369.01	3370.21	0.047709	10.50	52.76	43.31	1.68
Reach #5	900	Profile 1	554.00	3364.00	3365.41	3366.05	3367.24	0.049177	10.84	51.12	40.96	1.71
Reach #5	850	Profile 1	554.00	3360.00	3361.31	3361.78	3362.87	0.056398	10.02	55.31	55.66	1.77
Reach #5	775	Profile 1	554.00	3356.00	3357.57	3358.01	3359.04	0.052129	9.72	56.99	56.29	1.70
Reach #5	700	Profile 1	554.00	3353.00	3354.22	3354.66	3355.70	0.045683	9.74	56.87	50.79	1.62
Reach #5	660	Profile 1	554.00	3349.00	3350.10	3350.64	3351.84	0.075494	10.60	52.28	60.28	2.01
Reach #5	620	Profile 1	554.00	3346.20	3347.00	3347.40	3348.34	0.081266	9.28	59.67	88.71	2.00
Reach #5	550	Profile 1	554.00	3340.30	3341.10	3341.54	3342.60	0.087281	9.83	56.35	81.13	2.08
Reach #5	475	Profile 1	554.00	3334.40	3335.09	3335.57	3336.82	0.125470	10.55	52.53	89.37	2.42
Reach #5	400	Profile 1	595.00	3328.50	3329.33	3329.76	3330.80	0.076005	9.72	61.23	80.82	1.97
Reach #5	350	Profile 1	595.00	3322.60	3323.37	3323.89	3325.15	0.098020	10.70	55.59	76.77	2.22
Reach #5	300	Profile 1	595.00	3317.00	3323.75		3323.75	0.000020	0.55	1083.47	216.83	0.04
Reach #5	260	Profile 1	595.00	3312.00	3323.75		3323.75	0.000004	0.35	1699.45	186.00	0.02
Reach #5	250	Profile 1	595.00	3312.00	3323.75	3313.30	3323.75	0.000004	0.35	1676.89	197.16	0.02

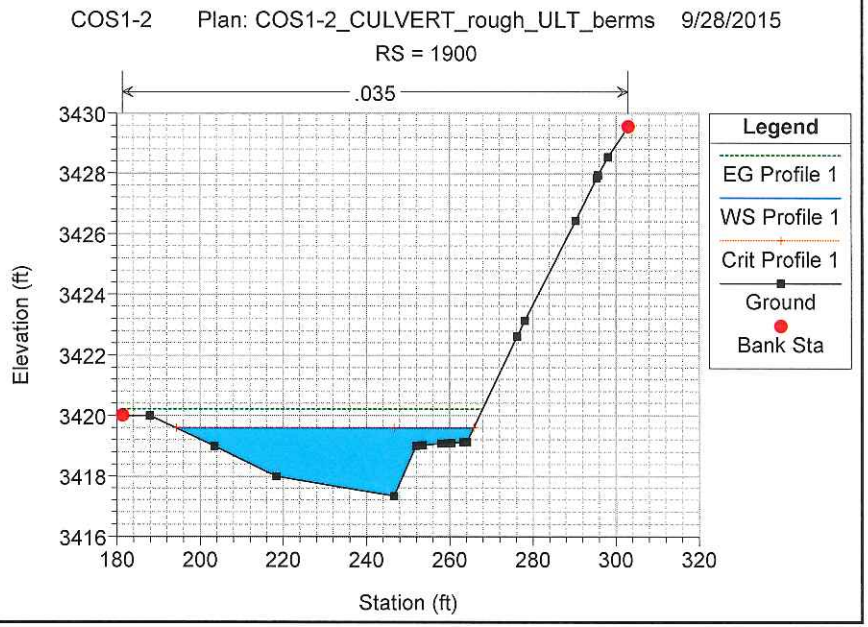
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015

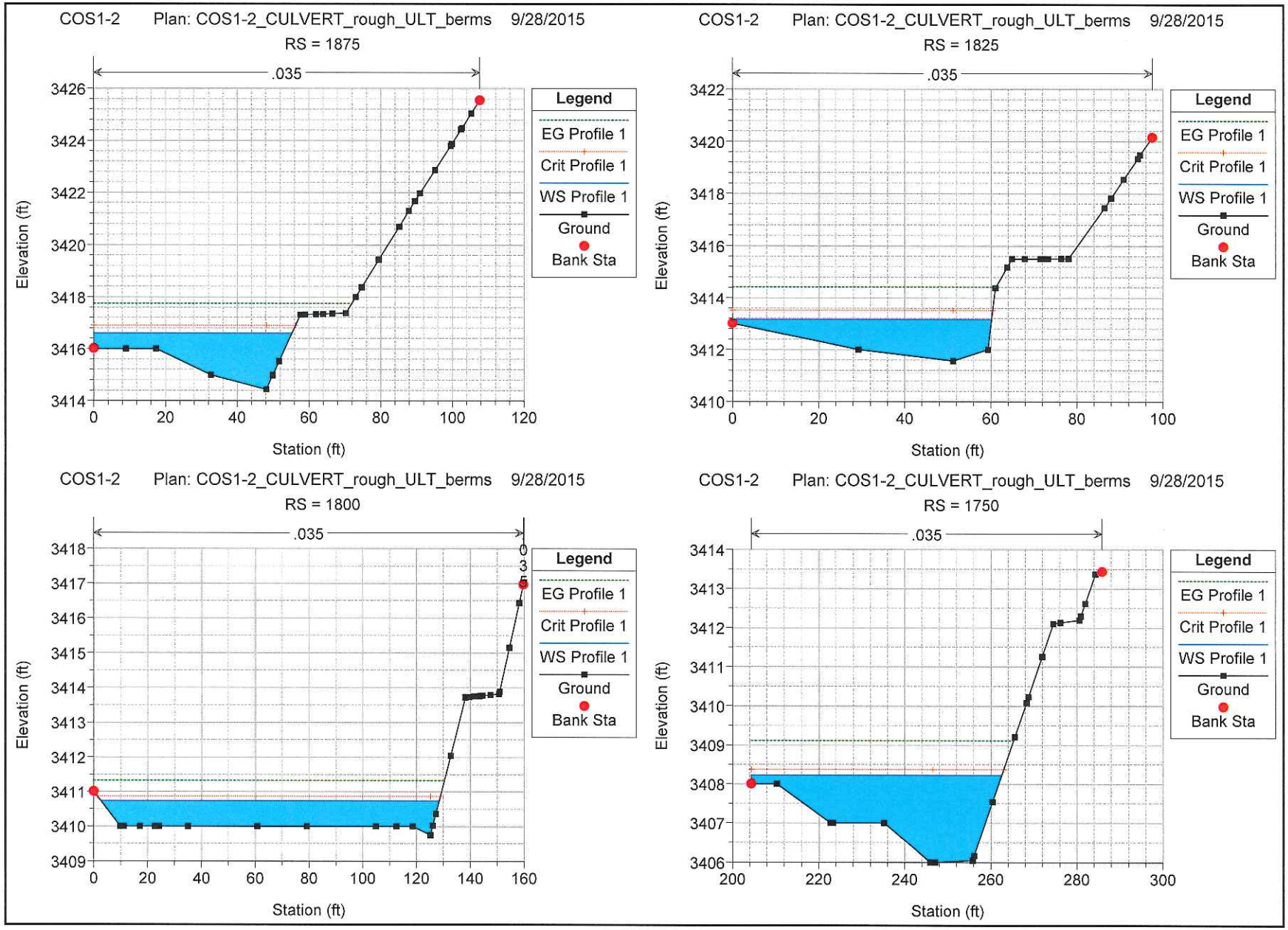


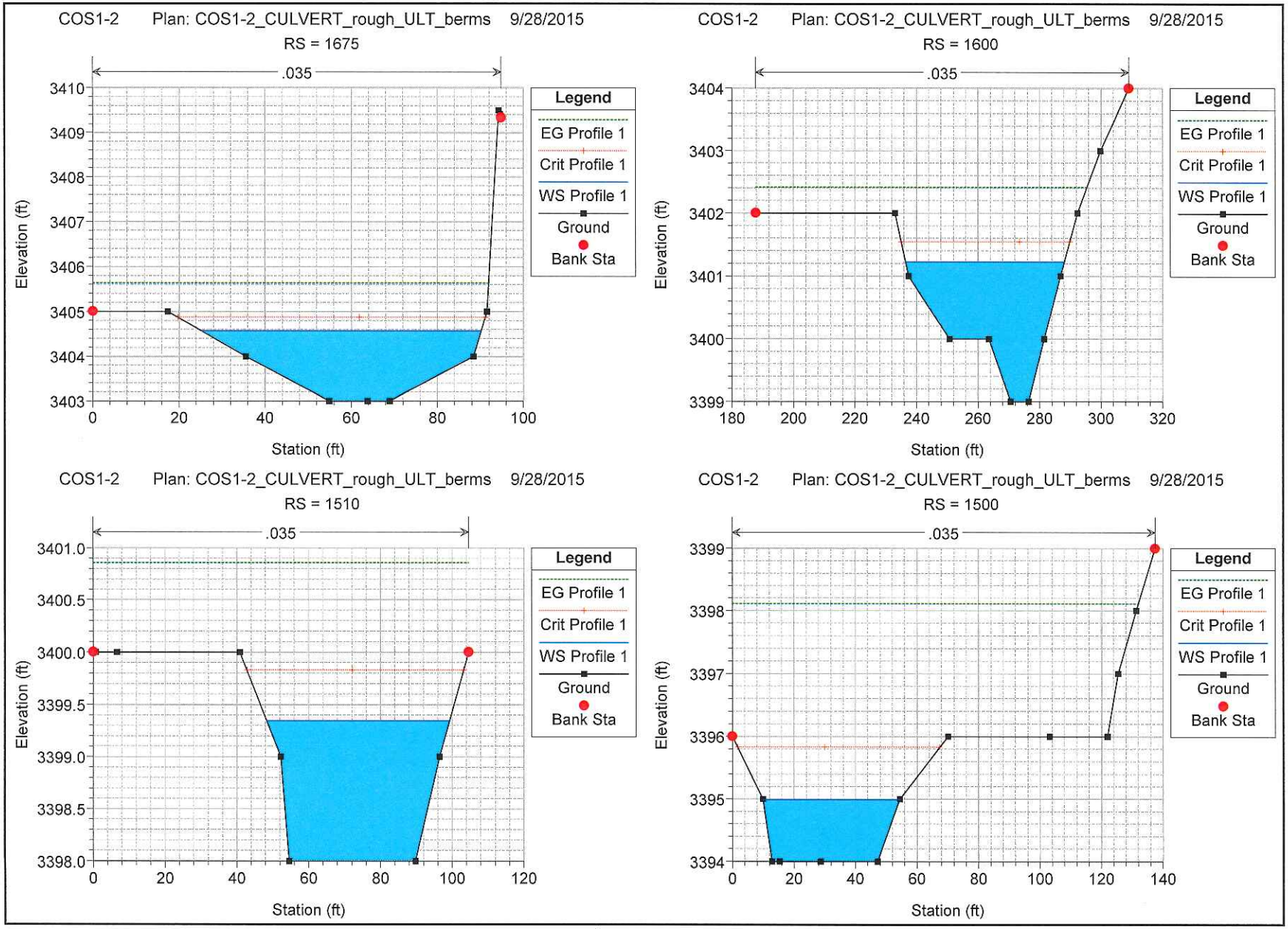

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 2051.55
.047
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Bank Sta

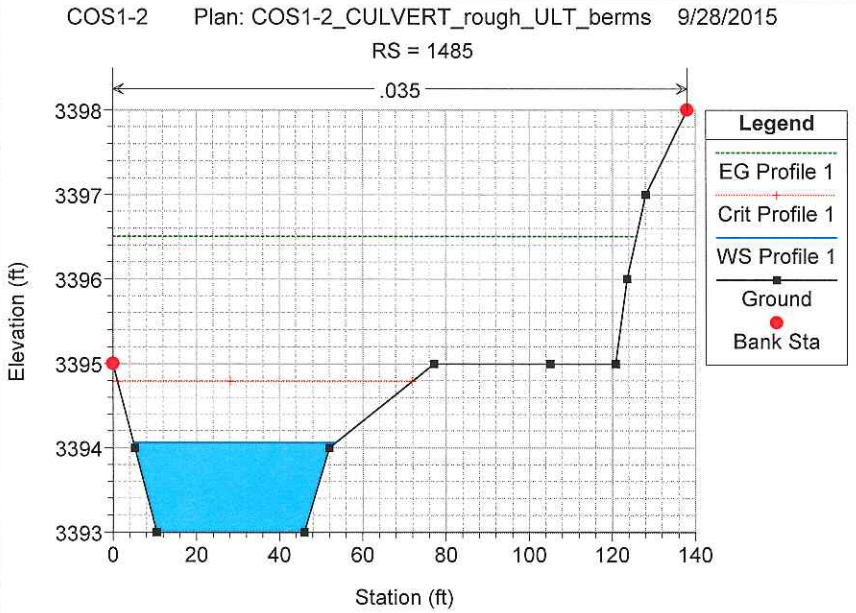

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 2051
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

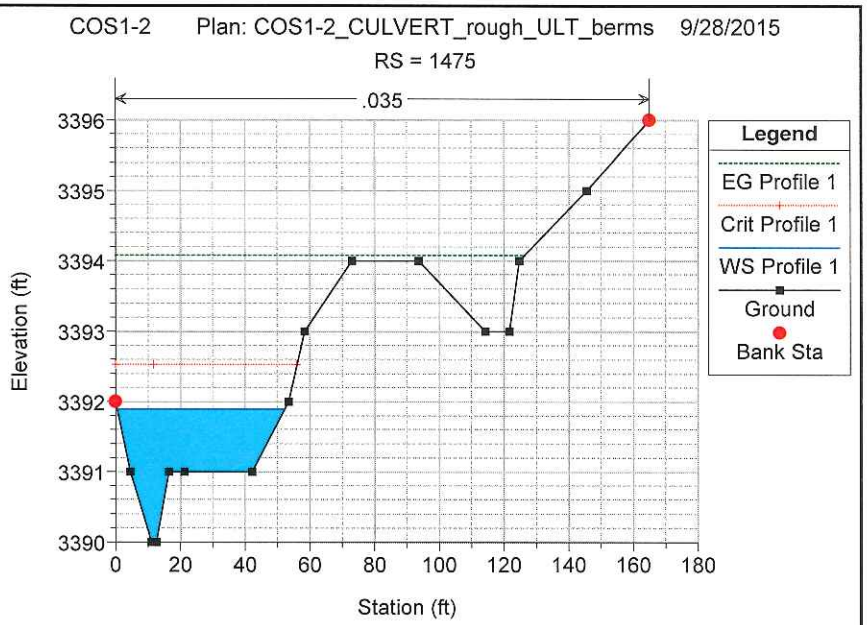

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1950
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Ground
Bank Sta

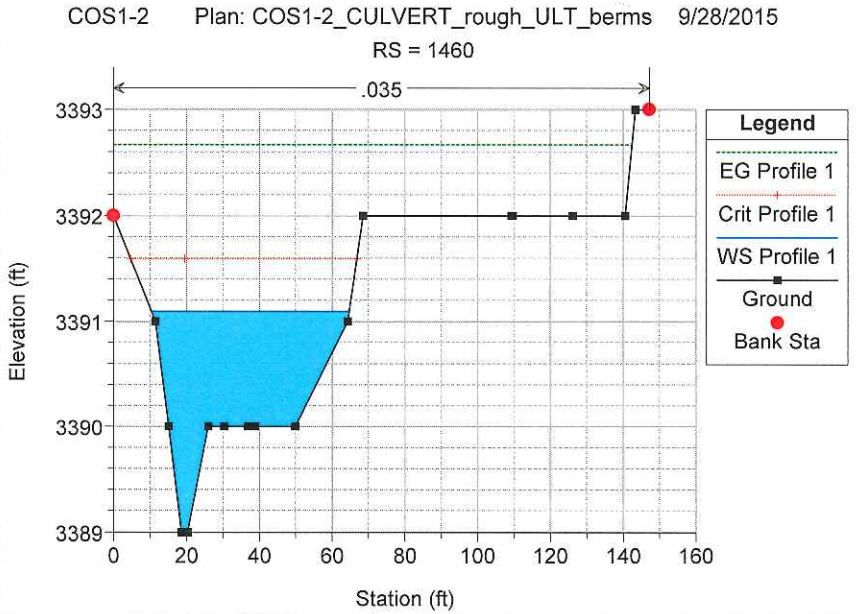

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1900
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
WS Profile 1
Crit Profile 1
Ground
Bank Sta

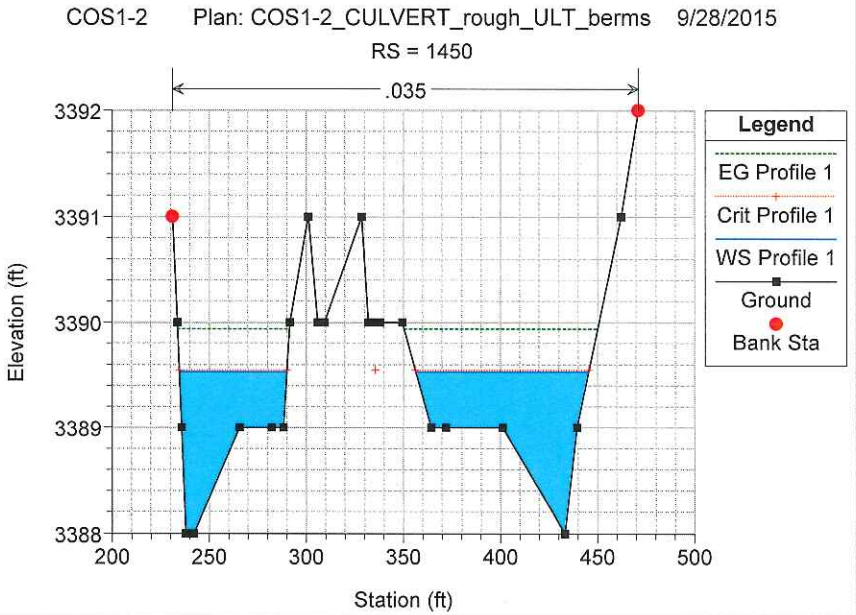

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1875
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1825
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1800
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1750
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

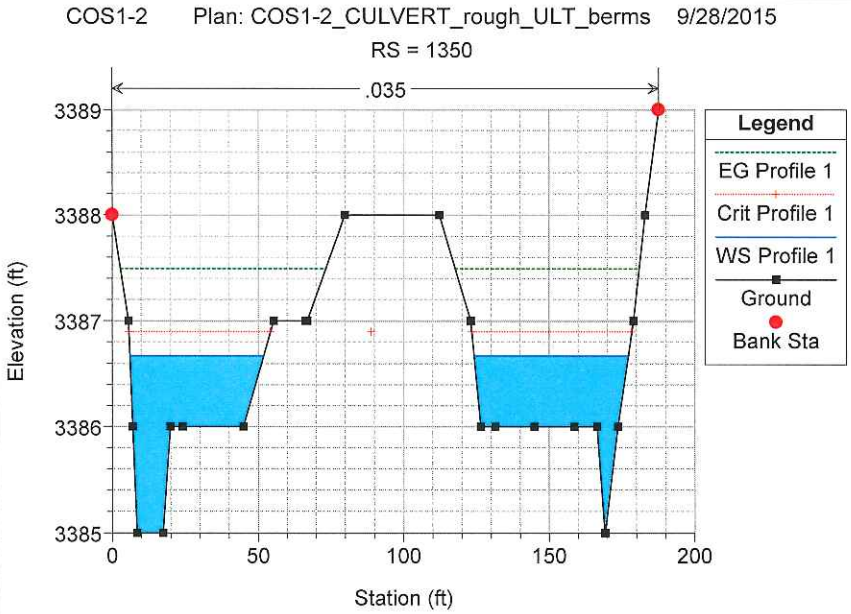

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1675
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1600
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1510
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1500
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

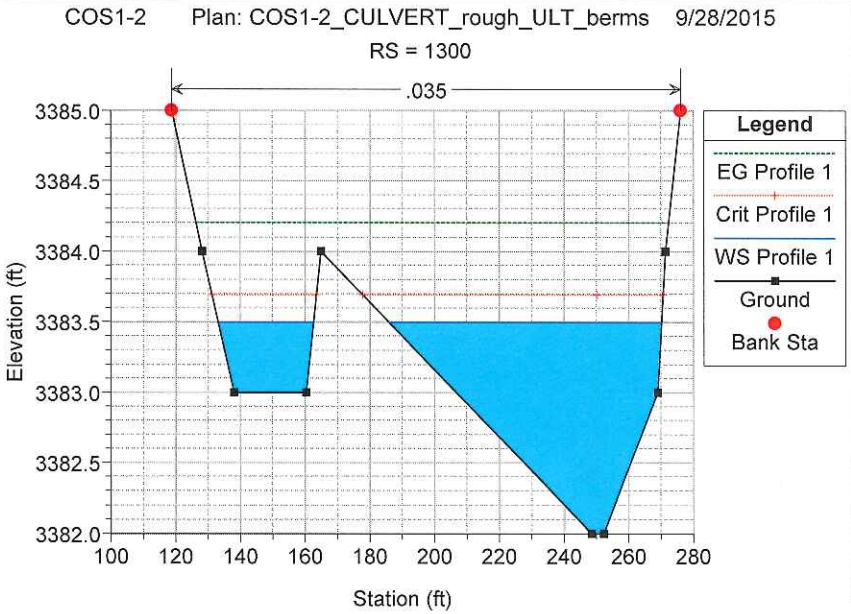

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1485
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

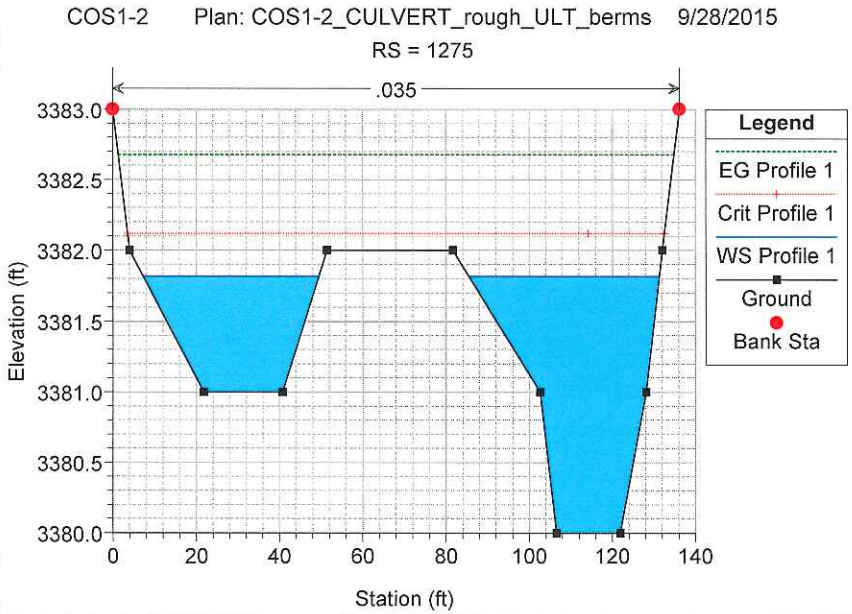

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1475
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

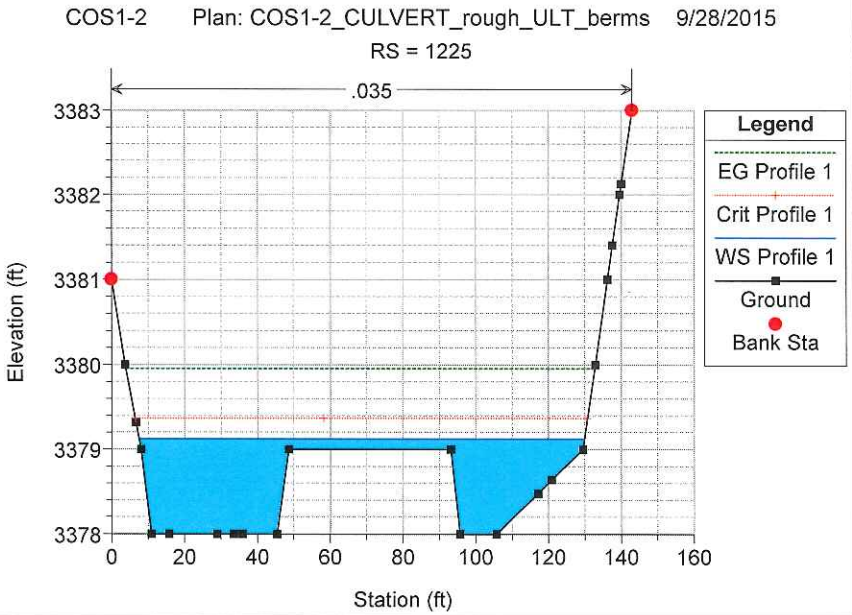

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1460
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

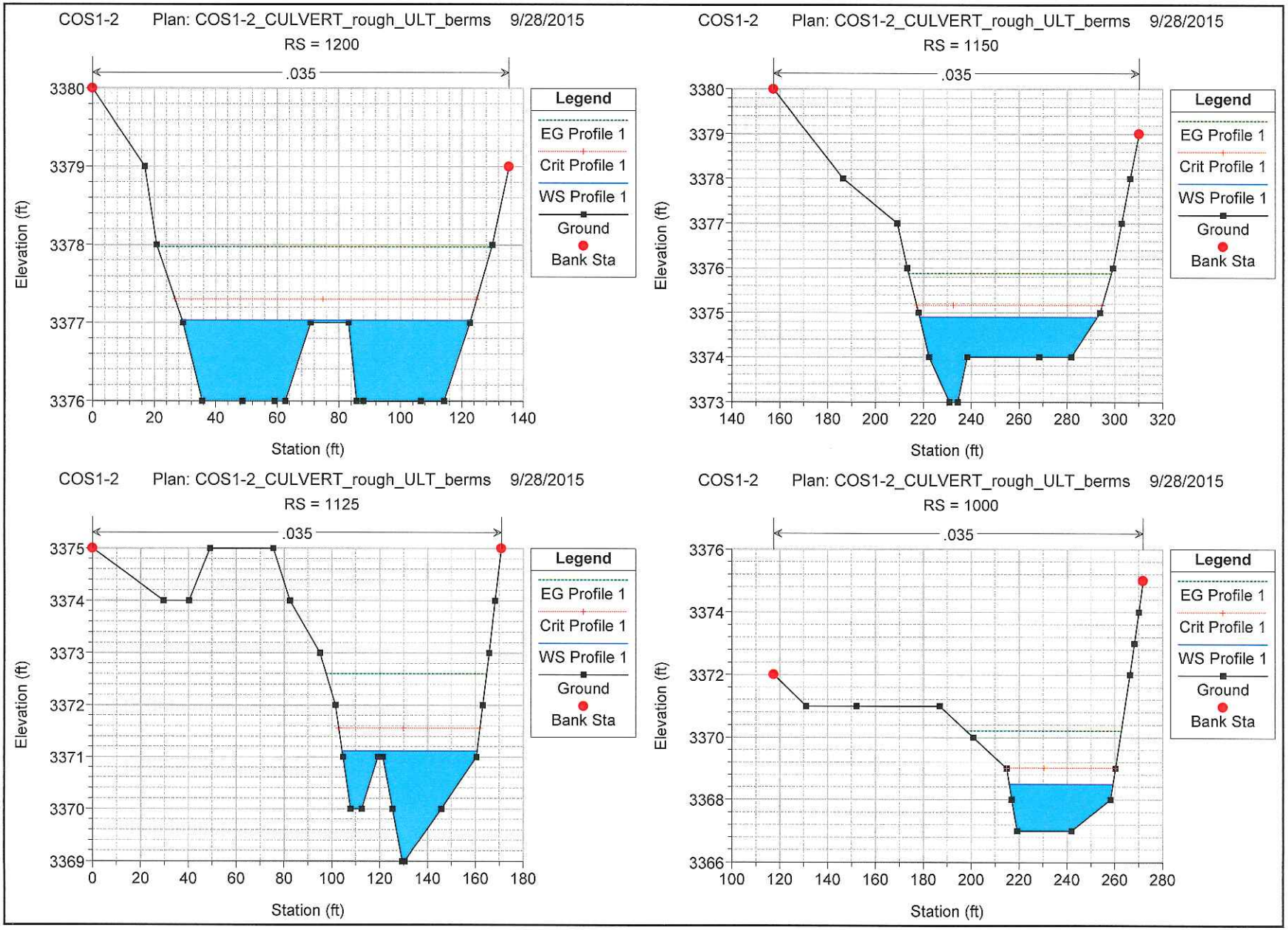

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1450
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

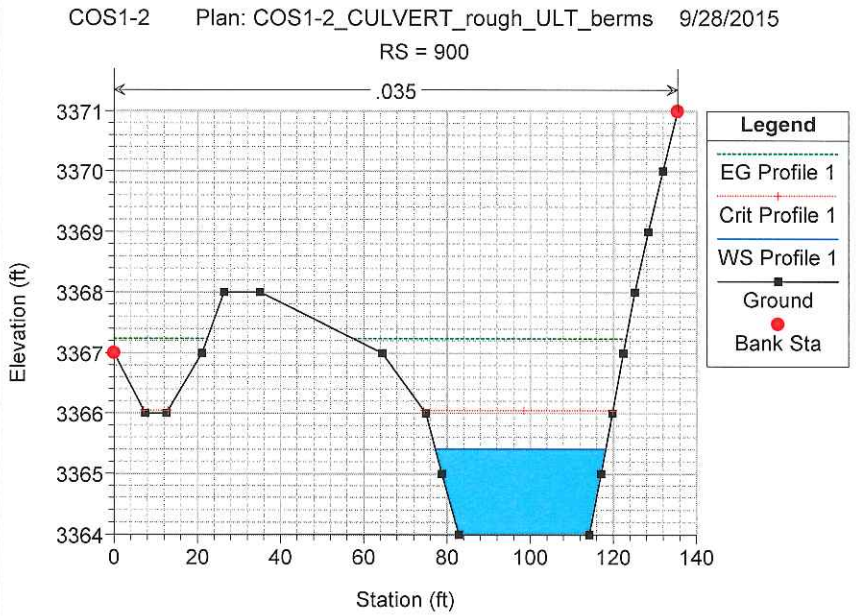

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1350
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

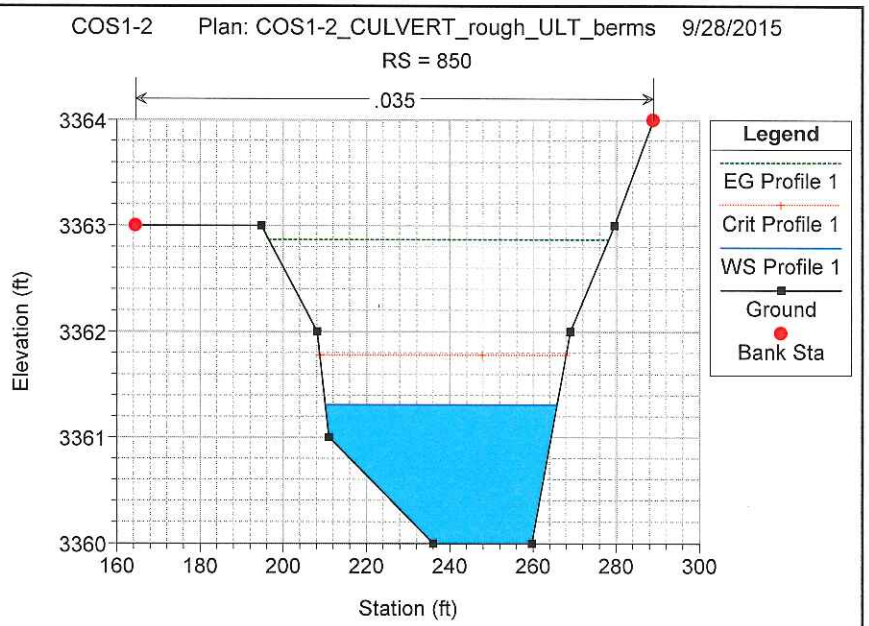

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1300
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

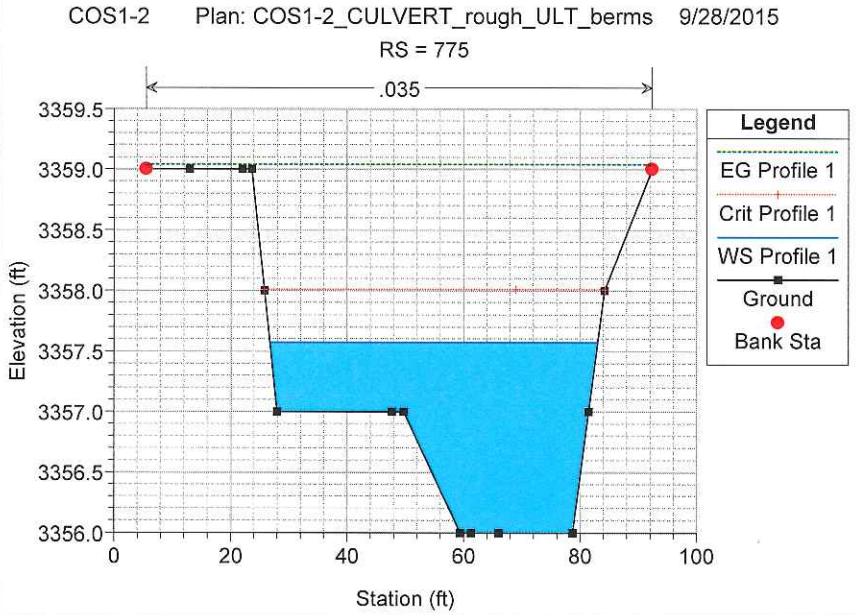

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1275
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

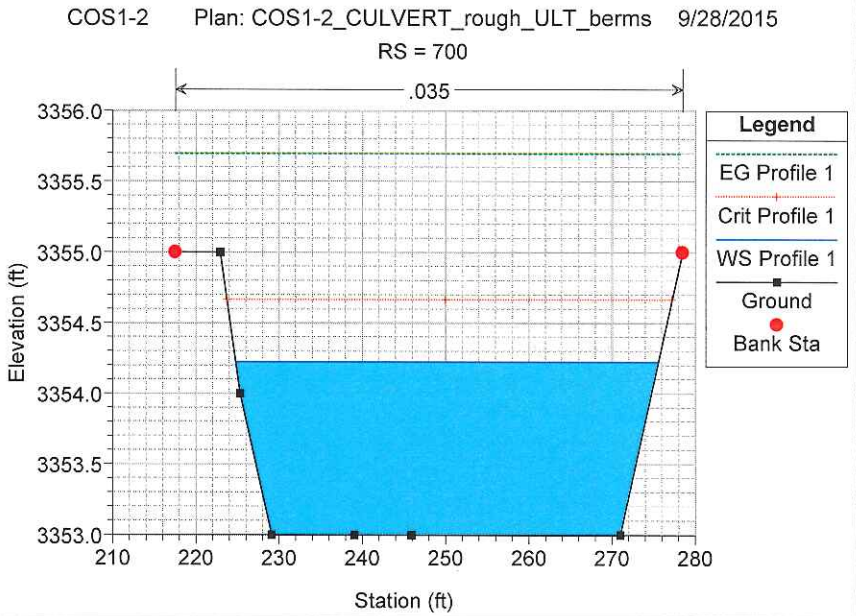

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1225
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

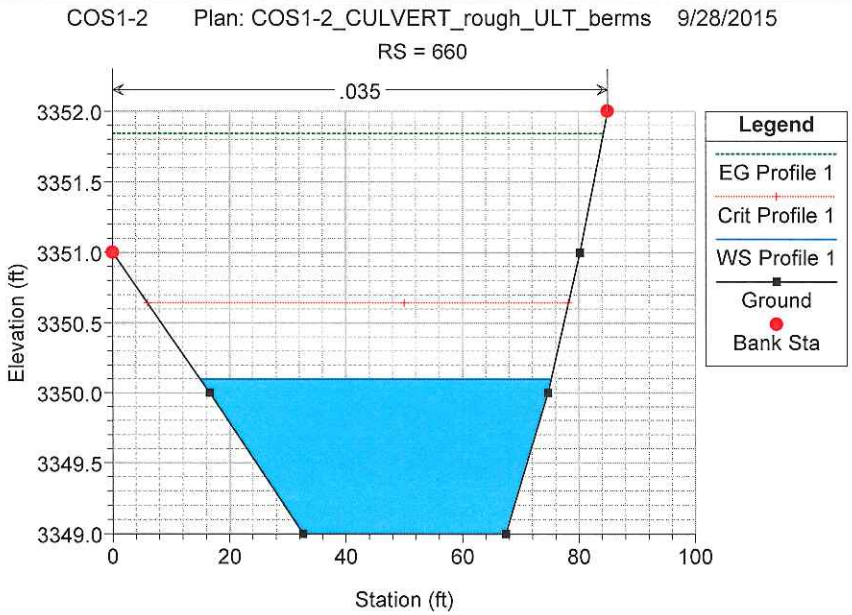

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1200
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1150
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1125
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 1000
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

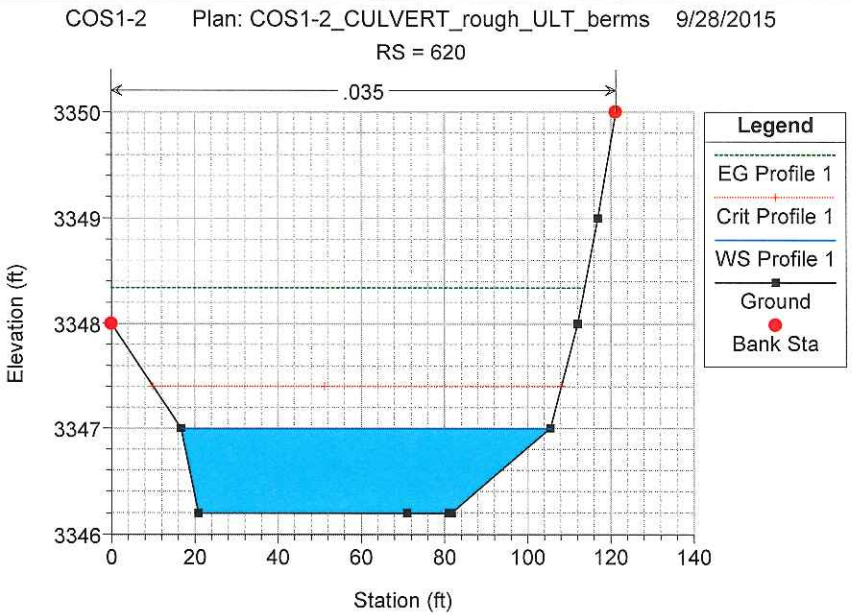

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 900
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

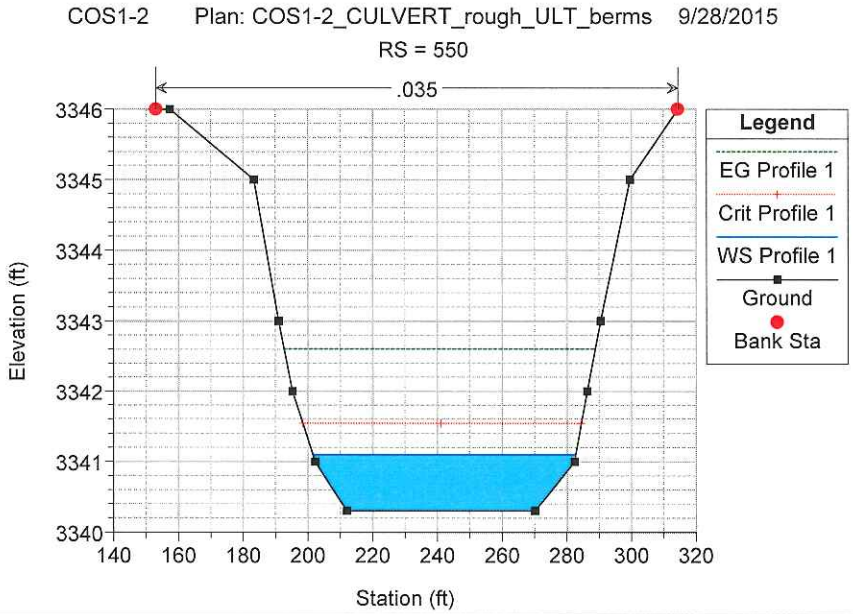

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 850
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

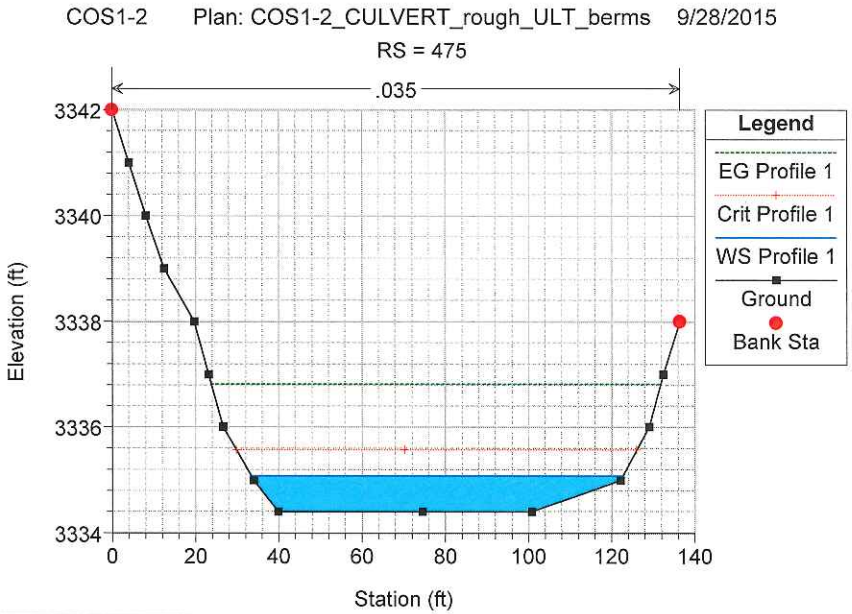

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 775
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

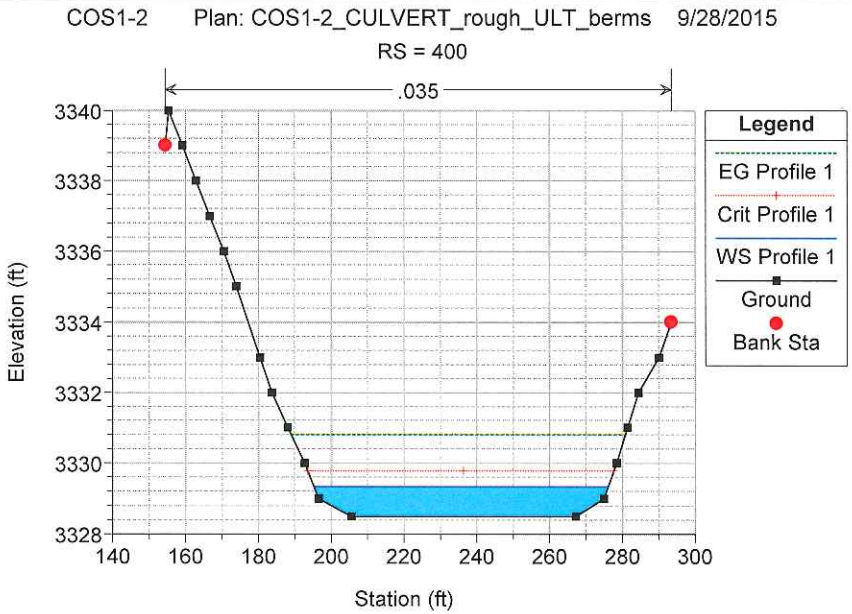

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 700
.035
Elevation (ft)
Station (ft)
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta

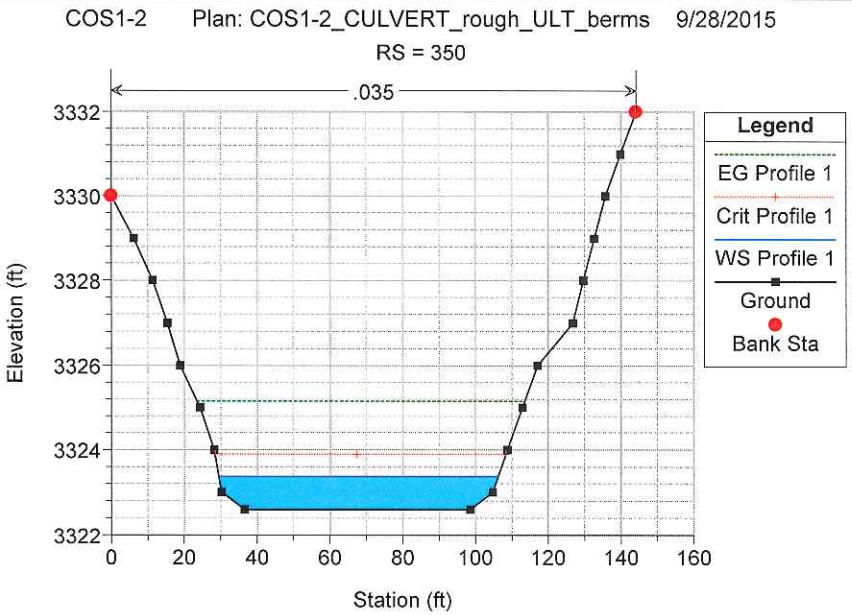

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 660
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

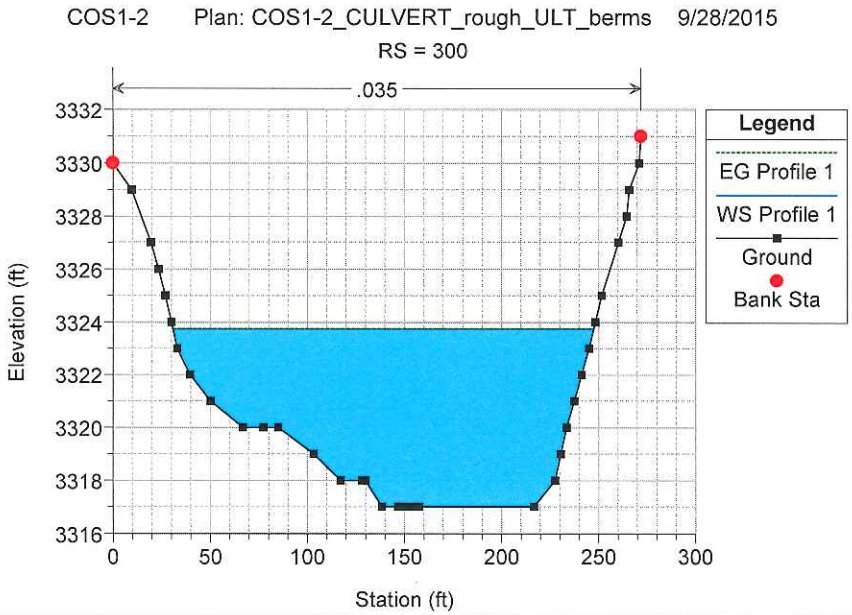

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 620
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

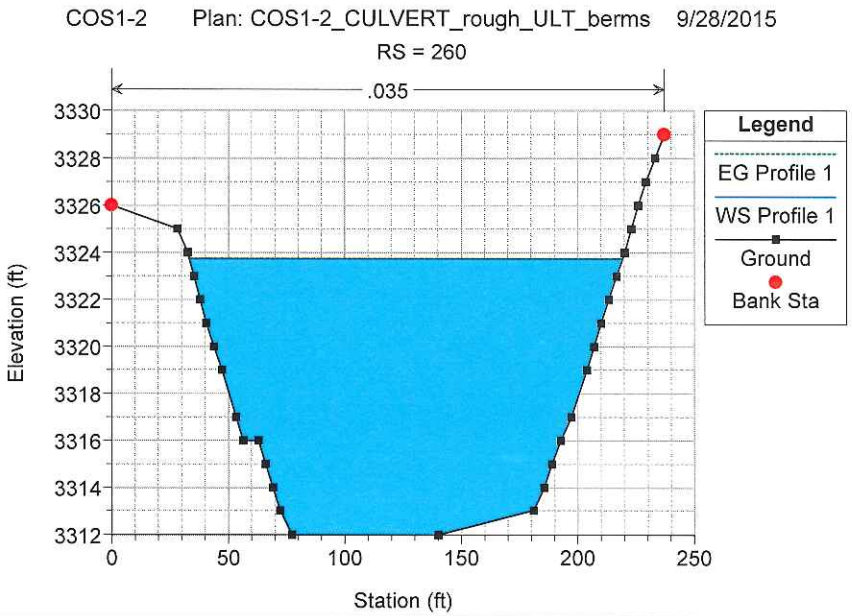

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 550
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)


COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 475
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)

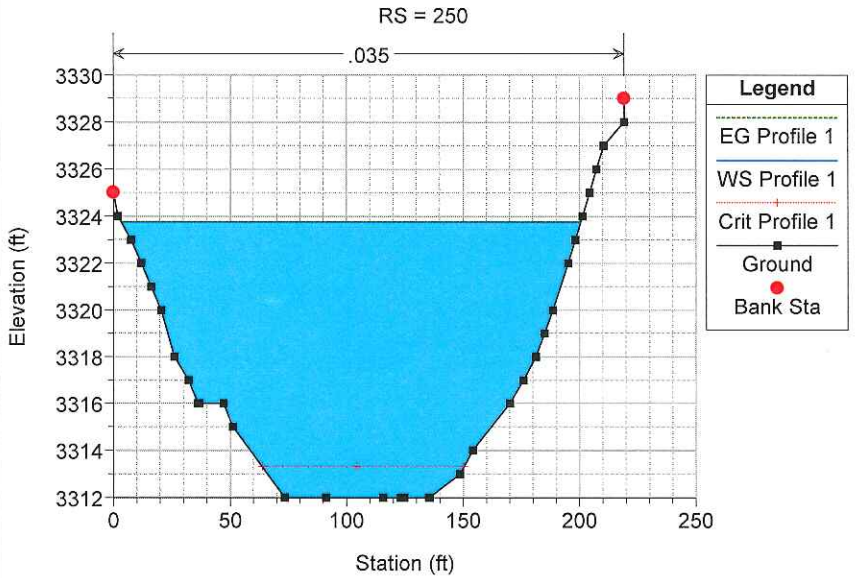

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 400
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
3340
3338
3336
3334
3332
3330
3328
140
160
180
200
220
240
260
280
300


COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 350
.035
Legend
EG Profile 1
Crit Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
3332
3330
3328
3326
3324
3322
0
20
40
60
80
100
120
140
160


COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 300
.035
Legend
EG Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
3332
3330
3328
3326
3324
3322
3320
3318
3316
0
50
100
150
200
250
300


COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015
RS = 260
.035
Legend
EG Profile 1
WS Profile 1
Ground
Bank Sta
Elevation (ft)
Station (ft)
3330
3328
3326
3324
3322
3320
3318
3316
3314
3312
0
50
100
150
200
250

COS1-2 Plan: COS1-2_CULVERT_rough_ULT_berms 9/28/2015





NORTH
SCALE 1" = 200 feet

200 0 200 400
SCALE FEET

LEGEND

- SUBBASIN BOUNDARY
- PRORATED SUBBASIN BOUNDARY
- ON8R — DRAINAGE SUBBASIN
- ON8R-1 — PRORATED DRAINAGE SUBBASIN
- CRR1 — CONCENTRATION POINT
- FLOW DIRECTION

SUMMARY OF HEC-1 MODEL
INTERIM CONDITION

Basin	Remarks	Area (ac)	Q_{100} (cfs)	Q_{10} (cfs)
RG6	Rough-graded Alta and offsite to north	40.2	122	56
7-2B	Offsite area west of Summerlin boundary	60.4	182	82
7-2A*	Offsite area west of Village 24; drains south within western boundary channel	283.5	636	287
CRR1*	Combine flows at Village 24 boundary at northerly existing wash: 7-2B+7-2A	---	760	331
DIVS*	Flow diversion to the south	---	259	113
DCRR1	Remaining flow that continues to culverts at Crossbridge	---	501	218
RG6C*	Offsite area draining to multiple culverts under Crossbridge	30.7	85	38
CP12A*	Combine flows at upstream side of culverts: DCRR1+RG6C	---	547	234
CD1**	Portion of Crossbridge Drive draining to culverts under Crossbridge	3.7	13	7
CP12B*	Combine flows at downstream side of culverts: CD1+CP12A	---	553	237
C*	Future parcel C**	24.9	61	25
ON7R2	Onsite area southeast of multiple culverts at Crossbridge	20.4	60	26
CPRCB*	Combine flows at existing 7' x 7' open inlet in Unit 1	---	633	269
CBRG	Rough-graded Crossbridge Drive	12.2	34	17
ST6	Suncreek Road	1.8	7	4
RG6D	Area southwest of Alta and Sky Vista	4.8	14	6
RG6A	Area west of Crossbridge; crosses Crossbridge at dip section	10.2	28	13
RG6B	Area west of Crossbridge; crosses Crossbridge at dip section	44.3	116	51
RG6E	Area bounded by Alta, Crossbridge, Suncreek, Sky Vista	44.8	123	54
CP8	Combine flows in Sky Vista storm drain at intersection with Suncreek	---	289	125
ST2	Sky Vista between Alta and Crossbridge	10.0	33	17
RG6F	Area south of Suncreek and west of Sky Vista; drains to open inlet to Sky Vista storm drain	17.2	48	21
CP9	Combine flows in Sky Vista storm drain: CP8+ST2+RG6F	---	364	160
CP9B	Combine flows at existing 7' x 7' open inlet in Unit 1 and flows in Sky Vista storm drain	---	961	422
OFF6	Offsite area west of Village 24 and drains south within western boundary channel	3.5	13	6
OFF7	Offsite area west of Village 24 drains south within western boundary channel	76.1	203	91
OFF8	Offsite area west of Village 24 drains south within western boundary channel	13.8	40	18
OFF9	Offsite area west of Village 24 drains south within western boundary channel	4.4	15	7
OFF10	Offsite area west of Village 24 drains south within western boundary channel	7.4	24	11
OFF11A	Offsite area west of Village 24; drains north within western boundary channel	91.6	252	113
CRR2	DIVS+COFF10+OFF11A	---	728	325
ON11	Onsite area west of existing berm	34.5	97	44
ON7R*	Onsite area draining south to RCB stub	7.3	21	9
ON8R*	Onsite area west of Crossbridge	27.2	77	34
CP1	Combine portions of onsite area west of Crossbridge: ON7R + ON8R	---	97	44
CD2**	Portion of Crossbridge Drive	3.8	13	7
ON10R	Onsite area between existing berm and Crossbridge	5.4	16	7
CP2	Combine flows in Crossbridge storm drain: CP1 + ON10R + CD2	---	126	57
OFF11B*	Offsite area south of Crossbridge	56.8	153	68
CP11	Combine offsite area west of Village 24+COP2+ON11+OFF11B	---	1086	492
CD3**	Portion of Unit 2 Crossbridge improvements that drains to existing Unit 1 improvements	1.4	6	3

* Revised with Update #3.
** Referenced from the Update #2 Conceptual Study.

SUMMARY OF PRORATED STORM FLOWS
INTERIM CONDITION
100-Year and 10-Year Runoff

Parent Basin	Area (ac)	Q_{100} (cfs)	Unit Flow (cfs/ac)	Q_{10} (cfs)	Unit Flow (cfs/ac)
RG6	40.16	122	3.04	56	1.39
RG6D	4.79	14	2.92	6	1.25
RG6E	44.8	123	2.75	54	1.21
RG6F	17.2	48	2.79	21	1.22
ON8R*	24.9	76	3.05	34	1.37
Prorated Subbasins					
SubBasin	Area (ac)	Unit Flow (cfs/ac)	Q_{100} (cfs)	Unit Flow (cfs/ac)	Q_{10} (cfs)
RG6-1	24.42	3.04	74	1.39	34
D1A	1.62	2.92	5	1.25	2
D1B	2.42	2.92	7	1.25	3
D2	0.75	2.92	2	1.25	1
E1	2.34	2.75	7	1.21	4
E2A	8.53	2.75	23	1.21	10
E2B	7.06	2.75	19	1.21	9
E3A	23.03	2.75	63	1.21	28
E3B	3.84	2.75	11	1.21	5
F1	1.55	2.79	4	1.22	2
F2	3.87	2.79	11	1.22	5
F3	11.79	2.79	33	1.22	14
ON8R-1	3.77	3.05	12	1.37	5

CROSS SECTION	DISCHARGE (cfs)	ACTUAL DEPTH (ft)	VELOCITY (ft/s)	SCOUR PROTECTION REQUIRED
CH1	1900	0.9	9.2	Gabions/5-foot cutoff wall
CH2	1900	1.2	11.2	Gabions/5-foot cutoff wall
CH3	1900	0.8	8.9	Gabions/5-foot cutoff wall

Note: Table is referenced from the Unit 1 Improvements.

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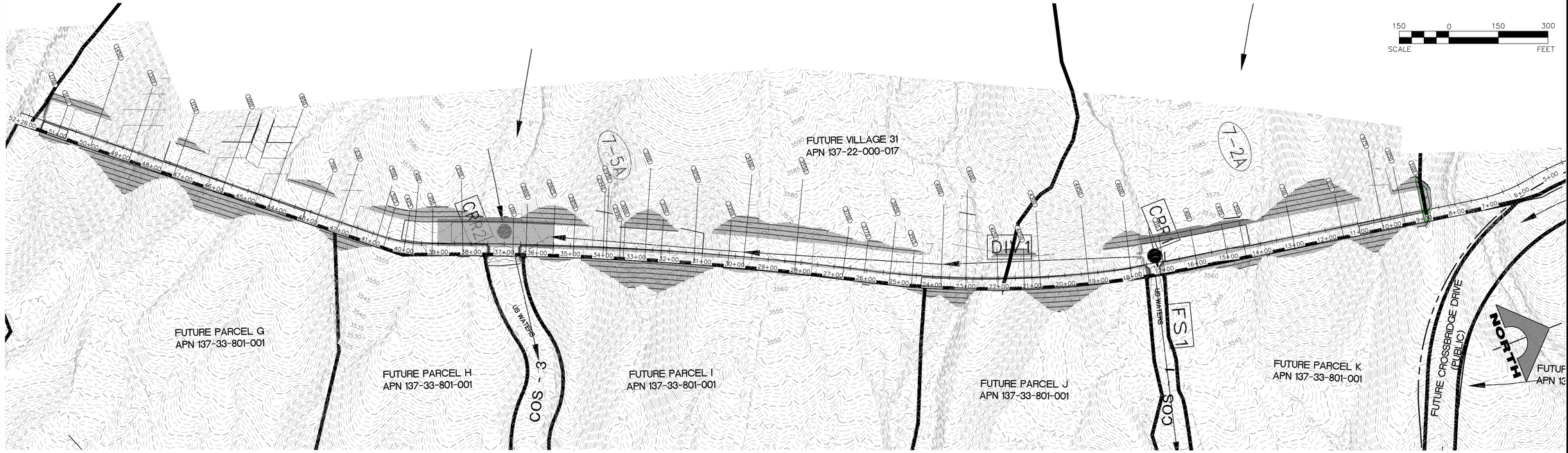
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SUMMERLIN VILLAGE 24
UNIT 2 IMPROVEMENTS
FIGURE 7U3R
INTERIM CONDITION DRAINAGE MAP

DRAWING
FIG7U3R
OF SHTS

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CRR2B - HYDRAULIC MODELS RESULTS SUMMARY AND SUPER-ELEVATION CALCULATIONS

Sta	Plan Sta	ULT Q	FL Elevation	WS Elevation	Depth	Vel	Top Width	Froude #	Radius	Freeboard	Superelevation	Total Depth	Actual Depth	Riprap
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft)			(ft)	(ft)	(ft)	(ft)	(D50- inches)
1700	51+50.00	253	3562.50	3563.42	0.92	4.39	65.52	0.83	0	1.0	0.0	1.9	3.0	-
1600	51+00.00	253	3562.19	3563.18	0.99	4.04	66.08	0.73	0	1.0	0.0	2.0	3.0	-
1450	49+90.40	253	3561.52	3562.33	0.81	5.03	64.83	1.01	0	1.1	0.0	1.9	3.0	-
1320	48+67.16	253	3560.69	3561.61	0.92	3.25	109.26	0.68	0	1.0	0.0	1.9	3.0	-
1150	47+25.00	253	3559.76	3560.68	0.92	4.40	65.51	0.83	0	1.0	0.0	1.9	3.0	-
1000	45+70.96	253	3558.75	3559.51	0.76	4.13	100.83	0.93	0	1.0	0.0	1.8	3.0	-
850	44+22.48	253	3557.76	3558.73	0.97	3.03	111.63	0.62	0	1.0	0.0	2.0	3.0	-
700	42+71.49	253	3556.76	3557.57	0.81	5.02	64.97	1.01	0	1.1	0.0	1.9	3.0	-
630	42+04.74	253	3556.24	3557.25	1.01	3.01	109.36	0.60	0	1.0	0.0	2.0	3.0	-
550	40+83.66	253	3555.49	3557.15	1.66	2.03	81.48	0.29	500	1.0	0.0	2.7	3.0	-
525	40+56.00	253	3555.31	3557.08	1.77	2.19	70.63	0.30	500	1.0	0.0	2.8	3.5	-
425	40+00.00	253	3554.93	3557.07	2.14	1.78	72.92	0.22	500	1.0	0.0	3.1	3.5	-
400	39+72.21	253	3554.77	3557.07	2.30	1.63	75.14	0.20	500	1.0	0.0	3.3	3.5	-
350	39+14.98	720	3554.38	3556.62	2.24	4.83	73.39	0.60	11926	1.0	0.0	3.2	3.5	12
250	38+23.68	720	3553.79	3556.00	2.21	4.88	73.34	0.61	11926	1.0	0.0	3.2	3.5	12
100	36+32.06	720	3553.33	3555.35	2.02	5.42	71.31	0.70	11926	1.0	0.0	3.0	3.5	12, 24 (LOB)

CRR2A - HYDRAULIC MODELS RESULTS SUMMARY AND SUPER-ELEVATION CALCULATIONS

Sta	Plan Sta	ULT Q	FL Elevation	WS Elevation	Depth	Vel	Top Width	Froude #	Radius	Freeboard	Superelevation	Total Depth	Actual Depth	Riprap
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft)			(ft)	(ft)	(ft)	(ft)	(D50- inches)
4600	18+00.00	287	3558.90	3560.60	1.70	2.60	70.22	0.37	11926	1.0	0.0	2.7	3.0	-
4450	19+28.47	540	3558.51	3560.27	1.76	3.73	93.60	0.51	11926	1.0	0.0	2.8	3.0	-
4300	20+74.12	540	3558.07	3559.91	1.84	4.20	88.08	0.56	11926	1.0	0.0	2.8	3.0	-
4250	21+22.19	540	3557.93	3559.67	1.74	4.76	70.46	0.66	11926	1.0	0.0	2.7	3.0	-
4150	22+02.06	540	3557.69	3559.24	1.55	5.33	69.92	0.78	11926	1.0	0.0	2.6	3.0	-
4100	22+97.42	540	3557.40	3559.22	1.82	2.73	156.71	0.43	11926	1.0	0.0	2.8	3.0	-
4000	23+72.68	540	3557.17	3559.07	1.90	3.18	107.98	0.42	11926	1.0	0.0	2.9	3.0	-
3915	24+60.08	540	3556.91	3558.70	1.79	4.61	70.76	0.63	11926	1.0	0.0	2.8	3.0	-
3850	25+27.17	540	3556.71	3558.54	1.83	4.39	79.10	0.58	11926	1.0	0.0	2.8	3.0	-
3770	26+07.18	540	3556.47	3558.28	1.81	4.59	70.17	0.62	2964	1.0	0.0	2.8	3.0	-
3700	26+68.77	540	3556.28	3558.09	1.81	4.56	70.82	0.62	2964	1.0	0.0	2.8	3.0	-
3550	28+15.85	540	3555.83	3557.63	1.80	4.57	70.86	0.62	2964	1.0	0.0	2.8	3.0	-
3400	29+72.06	540	3555.38	3557.15	1.77	4.69	70.60	0.65	2964	1.0	0.0	2.8	3.0	-
3350	30+18.41	540	3555.23	3556.96	1.73	4.80	70.35	0.67	2964	1.0	0.0	2.7	3.0	-
3250	31+22.61	540	3554.92	3556.87	1.95	3.32	94.64	0.43	2964	1.0	0.0	3.0	3.0	-
3150	32+23.12	540	3554.62	3556.58	1.96	4.18	71.76	0.55	2964	1.0	0.0	3.0	3.0	-
3100	32+71.05	540	3554.48	3556.49	2.01	4.07	72.06	0.53	2964	1.0	0.0	3.0	3.0	-
3000	33+36.60	540	3554.40	3556.44	2.04	4.00	72.27	0.52	2964	1.0	0.0	3.0	3.5	-
2990	33+50.00	540	3554.25	3556.36	2.11	3.86	73.81	0.49	2964	1.0	0.0	3.1	3.5	-
2950	33+88.92	540	3554.13	3556.44	2.31	1.92	181.38	0.27	2964	1.0	0.0	3.3	3.5	-
2850	34+88.28	540	3553.83	3556.23	2.40	3.36	73.46	0.40	2964	1.0	0.0	3.4	3.5	-
2825	35+50.00	540	3553.65	3556.15	2.50	3.20	75.00	0.38	2964	1.0	0.0	3.5	3.5	12
2800	36+32.16	720	3553.39	3555.35	1.96	5.58	71.72	0.73	2964	1.0	0.0	3.0	3.5	12

CRR1 - HYDRAULIC MODELS RESULTS SUMMARY AND SUPER-ELEVATION CALCULATIONS

Sta	Plan Sta	ULT Q	FL Elevation	WS Elevation	Depth	Vel	Top Width	Froude #	Radius	Freeboard	Superelevation	Total Depth	Actual Depth	Riprap
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft)			(ft)	(ft)	(ft)	(ft)	(D50- inches)
1100	9+00.00	344	3561.59	3563.50	1.91	2.74	71.45	0.36	0	1.0	0.0	2.9	4.0	-
1050	9+59.36	344	3561.41	3563.46	2.05	2.55	72.28	0.33	0	1.0	0.0	3.1	4.0	-
975	10+26.73	344	3561.21	3563.48	2.27	1.30	155.50	0.17	0	1.0	0.0	3.3	4.0	-
850	11+49.84	344	3560.84	3563.41	2.57	1.98	75.41	0.23	0	1.0	0.0	3.6	4.0	-
700	12+99.60	841	3560.39	3562.87	2.48	5.02	74.89	0.59	0	1.0	0.0	3.5	4.0	-
550	14+50.00	841	3559.94	3562.55	2.61	4.94	75.65	0.56	0	1.0	0.0	3.6	4.0	24 (ROB)
495	15+00.00	841	3559.78	3562.45	2.67	4.81	75.89	0.53	0	1.0	0.0	3.7	4.5	24 (ROB)
400	15+99.60	841	3559.50	3562.32	2.82	4.54	76.92	0.49	0	1.0	0.0	3.8	4.5	24 (ROB)
310	17+00.00	841	3559.20	3562.20	3.00	4.24	78.00	0.45	2964	1.0	0.0	4.0	4.5	24 (ROB)

DATE:

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

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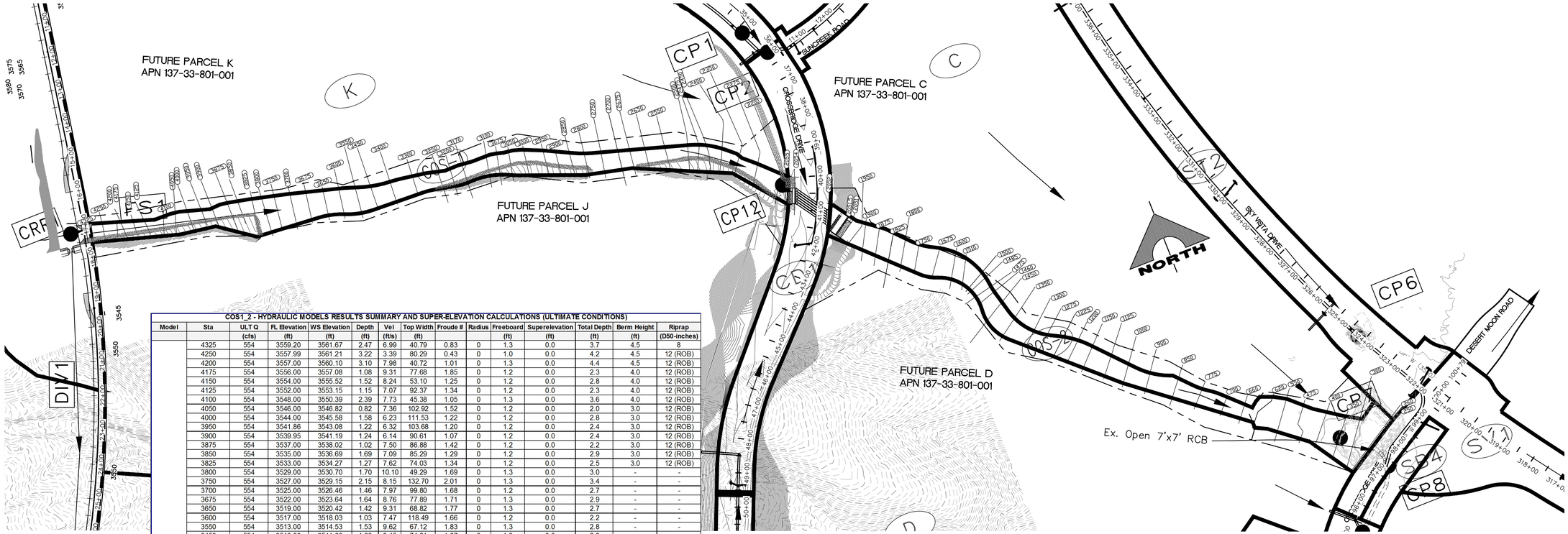
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Michelle Castell

THE HOWARD HUGHES COMPANY, LLC
SUMMERLIN VILLAGE 24
FIGURE 8U3R
HEC-RAS CROSS SECTION EXHIBIT

DRAWING
FIG 8U3R
1 OF 8 SHTS

cw24.dwg 07/2023 JH



COS1_2 - HYDRAULIC MODELS RESULTS SUMMARY AND SUPER-ELEVATION CALCULATIONS (ULTIMATE CONDITIONS)

Model	Sta	ULT Q	FL Elevation	WS Elevation	Depth	Vel	Top Width	Froude #	Radius	Freeboard	Superelevation	Total Depth	Berm Height	Riprap
		(cfs)	(ft)	(ft)	(ft)	(ft/s)	(ft)			(ft)	(ft)	(ft)	(ft)	(D50-inches)
	4325	554	3559.20	3561.67	2.47	6.99	40.79	0.83	0	1.3	0.0	3.7	4.5	8
	4250	554	3557.99	3561.21	3.22	3.39	80.29	0.43	0	1.0	0.0	4.2	4.5	12 (ROB)
	4200	554	3557.00	3560.10	3.10	7.98	40.72	1.01	0	1.3	0.0	4.4	4.5	12 (ROB)
	4175	554	3556.00	3557.08	1.08	9.31	77.68	1.85	0	1.2	0.0	2.3	4.0	12 (ROB)
	4150	554	3554.00	3555.52	1.52	8.24	53.10	1.25	0	1.2	0.0	2.8	4.0	12 (ROB)
	4125	554	3552.00	3553.15	1.15	7.07	92.37	1.34	0	1.2	0.0	2.3	4.0	12 (ROB)
	4100	554	3548.00	3550.39	2.39	7.73	45.38	1.05	0	1.3	0.0	3.6	4.0	12 (ROB)
	4050	554	3546.00	3546.82	0.82	7.36	102.92	1.52	0	1.2	0.0	2.0	3.0	12 (ROB)
	4000	554	3544.00	3545.58	1.58	6.23	111.53	1.22	0	1.2	0.0	2.8	3.0	12 (ROB)
	3950	554	3541.86	3543.08	1.22	6.32	103.68	1.20	0	1.2	0.0	2.4	3.0	12 (ROB)
	3900	554	3539.95	3541.19	1.24	6.14	90.61	1.07	0	1.2	0.0	2.4	3.0	12 (ROB)
	3875	554	3537.00	3538.02	1.02	7.50	86.88	1.42	0	1.2	0.0	2.2	3.0	12 (ROB)
	3850	554	3535.00	3536.69	1.69	7.09	85.29	1.29	0	1.2	0.0	2.9	3.0	12 (ROB)
	3825	554	3533.00	3534.27	1.27	7.62	74.03	1.34	0	1.2	0.0	2.5	3.0	12 (ROB)
	3800	554	3529.00	3530.70	1.70	10.10	49.29	1.69	0	1.3	0.0	3.0	-	-
	3750	554	3527.00	3529.15	2.15	8.15	132.70	2.01	0	1.3	0.0	3.4	-	-
	3700	554	3525.00	3526.46	1.46	7.97	99.80	1.68	0	1.2	0.0	2.7	-	-
	3675	554	3522.00	3523.64	1.64	8.76	77.89	1.71	0	1.3	0.0	2.9	-	-
	3650	554	3519.00	3520.42	1.42	9.31	68.82	1.77	0	1.3	0.0	2.7	-	-
	3600	554	3517.00	3518.03	1.03	7.47	118.49	1.66	0	1.2	0.0	2.2	-	-
	3550	554	3513.00	3514.53	1.53	9.62	67.12	1.83	0	1.3	0.0	2.8	-	-
	3450	554	3510.00	3511.60	1.60	9.45	74.21	1.87	0	1.3	0.0	2.9	-	-
	3400	554	3506.00	3508.11	2.11	8.04	107.10	1.76	0	1.3	0.0	3.4	-	-
	3300	554	3502.00	3503.79	1.79	9.29	66.13	1.72	0	1.3	0.0	3.1	-	-
	3250	554	3499.00	3500.32	1.32	6.74	84.31	1.18	0	1.2	0.0	2.5	3.5	12 (ROB)
COS-1	3200	554	3496.00	3497.56	1.56	7.41	73.19	1.27	0	1.2	0.0	2.8	3.5	12 (ROB)
	3170	554	3493.00	3494.61	1.61	8.62	66.99	1.54	0	1.3	0.0	2.9	3.5	12 (ROB)
	3100	554	3489.00	3490.85	1.85	7.43	74.13	1.28	0	1.2	0.0	3.1	3.5	12 (ROB)
	3075	554	3487.00	3488.89	1.89	8.27	59.05	1.34	0	1.3	0.0	3.1	3.5	12 (ROB)
	3050	554	3485.00	3486.52	1.52	9.09	49.25	1.40	0	1.3	0.0	2.8	3.5	12 (ROB)
	3000	554	3482.00	3483.80	1.80	9.73	37.78	1.32	0	1.3	0.0	3.1	3.5	12 (ROB)
	2950	554	3479.00	3481.41	2.41	9.09	40.26	1.22	0	1.3	0.0	3.7	4.0	12 (ROB)
	2900	554	3477.00	3478.83	1.83	10.51	37.90	1.49	0	1.3	0.0	3.2	4.0	12 (ROB)
	2850	554	3474.00	3475.97	1.97	10.31	43.87	1.58	0	1.3	0.0	3.3	4.0	12 (ROB)
	2800	554	3471.00	3473.13	2.13	9.70	48.72	1.52	0	1.3	0.0	3.4	4.0	12 (ROB)
	2750	554	3469.00	3470.18	1.18	7.23	83.72	1.33	0	1.2	0.0	2.4	-	-
	2700	554	3466.00	3467.14	1.14	8.74	77.76	1.71	0	1.2	0.0	2.4	-	-
	2675	554	3463.85	3465.00	1.15	8.77	86.39	1.78	0	1.2	0.0	2.4	-	-
	2650	554	3461.00	3462.85	1.85	6.97	86.19	1.26	0	1.2	0.0	3.1	3.5	12 (ROB)
	2550	554	3457.75	3459.41	1.66	6.78	100.47	1.32	0	1.2	0.0	2.9	3.5	12 (ROB)
	2500	554	3454.00	3455.22	1.22	5.65	168.34	1.30	0	1.2	0.0	2.4	3.5	12 (ROB)
	2475	554	3452.00	3453.85	1.85	5.83	108.17	1.09	0	1.2	0.0	3.0	3.5	12 (ROB)
	2450	554	3450.00	3452.80	2.80	5.13	143.91	1.04	0	1.2	0.0	4.0	4.0	12 (ROB)
	2400	554	3448.00	3449.22	1.22	6.53	127.86	1.41	0	1.2	0.0	2.4	4.0	12 (ROB)
	2350	554	3445.00	3446.90	1.90	4.77	146.82	0.94	0	1.0	0.0	2.9	4.0	12 (ROB)
	2275	554	3442.00	3443.32	1.32	5.34	142.72	1.10	0	1.1	0.0	2.5	4.0	12 (ROB)
	2200	554	3437.00	3438.45	1.45	4.65	115.47	0.68	0	1.0	0.0	2.4	4.0	12 (ROB)
	2055	554	3434.00	3435.83	1.83	6.42	69.07	1.01	0	1.2	0.0	3.0	4.0	36
	2054	554	3430.00	3433.67	3.67	3.32	56.50	0.31	0	1.0	0.0	4.7	5.0	Concrete
	2053	Culvert				16.26	-			-	-	-	-	
	2052	554	3425.00	3426.14	1.14	11.09	79.15	1.83	0	1.3	0.0	2.4	-	Stilling Basin
	2051.55	554	3422.27	3426.77	4.50	4.73	64.00	0.62	0	1.0	0.0	5.5	-	36
	2051	554	3420.30	3422.66	2.36	7.40	72.69	1.29	0	1.2	0.0	3.6	-	-
	1950	554	3419.00	3420.95	1.95	3.26	184.32	0.60	0	1.0	0.0	2.9	-	-
	1900	554	3417.34	3419.60	2.26	6.32	71.56	1.01	0	1.2	0.0	3.5	-	-
	1875	554	3414.43	3416.61	2.18	8.56	55.31	1.40	0	1.3	0.0	3.5	-	-
	1825	554	3411.57	3413.17	1.60	8.93	60.17	1.55	0	1.3	0.0	2.9	-	-
	1800	554	3409.75	3410.74	0.99	6.15	125.83	1.28	0	1.2	0.0	2.1	-	-
	1750	554	3406.00	3408.23	2.23	7.53	58.19	1.18	200	1.2	0.3	3.7	-	-
	1675	554	3403.00	3404.57	1.57	8.28	64.96	1.44	200	1.2	0.3	3.2	-	-
	1600	554	3399.00	3401.23	2.23	8.73	51.66	1.39	200	1.3	0.3	3.8	-	-
	1510	554	3398.00	3399.35	1.35	9.87	50.97	1.66	200	1.3	0.4	3.0	-	-
	1500	554	3394.00	3394.99	0.99	14.17	44.43	2.66	200	1.4	0.7	3.0	-	-
	1485	554	3393.00	3394.06	1.06	12.53	48.73	2.32	200	1.3	0.6	3.0	-	-
	1475	554	3390.00	3391.90	1.90	11.85	51.85	2.20	200	1.4	0.6	3.8	-	-
	1460	554	3389.00	3391.09	2.09	10.07	54.28	1.76	146	1.3	0.6	4.0	-	-
	1450	554	3388.00	3389.53	1.53	5.12	144.29	1.04	146	1.1	0.4	3.1	-	-
	1350	554	3385.00	3386.67	1.67	7.27	98.87	1.46	146	1.2	0.6	3.4	-	-
	1300	554	3382.00	3383.50	1.50	6.73	113.73	1.39	146	1.2	0.5	3.2	-	-
COS-2	1275	554	3380.00	3381.82	1.82	7.43	88.10	1.42	0	1.2	0.0	3.0	-	-
	1225	554	3378.00	3379.13	1.13	7.29	122.38	1.63	0	1.2	0.0	2.3	-	-
	1200	554	3376.00	3377.03	1.03	7.78	93.74	1.57	0	1.2	0.0	2.2	-	-
	1150	554	3373.00	3374.90	1.90	7.94	74.24	1.44	0	1.2	0.0	3.1	-	-
	1125	554	3369.00	3371.12	2.12	9.77	56.50	1.72	0	1.3	0.0	3.4	-	-
	1000	554	3367.00	3368.49	1.49	10.50	43.31	1.68	0	1.3	0.0	2.8	-	-
	900	554	3364.00	3365.41	1.41	10.84	40.96	1.71	0	1.3	0.0	2.7	-	-
	850	554	3360.00	3361.31	1.31	10.02	55.66	1.77	0	1.3	0.0	2.6	-	-
	775	554	3356.00	3357.57	1.57	9.72	56.29	1.70	0	1.3	0.0	2.9	-	-
	700	554	3353.00	3354.22	1.22	9.74	50.79	1.62	0	1.3	0.0	2.5	-	-
	660	554	3349.00	3350.10	1.10	10.60	60.28	2.01	0	1.3	0.0	2.4	-	-
	620	554	3346.20	3347.00	0.80	9.28	88.71	2.00	0	1.2	0.0	2.0	-	-
	550	554	3340.30	3341.10	0.80	9.83	81.13	2.08	0	1.2	0.0	2.0	-	-
	475	554	3334.40	3335.09	0.69	10.55	89.37	2.42	0	1.2	0.0	1.9	-	-
	400	595	3328.50	3329.33	0.83	9.72	80.82	1.97	0	1.2	0.0	2.1	-	-
	350	595	3322.60	3323.37	0.77	10.70	76.77	2.22	0	1.2	0.0	2.0	-	-
	300	595	3317.00	3323.75	6.75	0.55	216.83	0.04	0	1.0	0.0	7.8	-	-
	260	595	3312.00	3323.75	11.75	0.35	186.00	0.02	0	1.0	0.0	12.8	-	-
	250	595	3312.00	3323.75	11.75	0.35	197.16	0.02	0	1.0	0.0	12.8	-	-

150 0 150 300
SCALE FEET

LEGEND

- COS-1 — DRAINAGE SUBBASIN
- CP1 — CONCENTRATION POINT
- SUBBASIN BOUNDARY
- 850 — HEC-RAS CROSS SECTION

DATE:	
GCW APP	
DATE	
AGEN APP	
DATE	
DESCRIPTION	
REV	DATE

PROJECT NO. 62024-221
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 14:43:41

G.C. WALLACE COMPANIES
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LAS VEGAS

F:\Projects\600\62024-221\Division\Fcl\Figures\Fig_9U3R.dwg
David Clark

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 24
HEC-RAS CROSS SECTION EXHIBIT (PARCELS COS-1 + COS-2)

DRAWING
FIG 9U3R
2 OF 8 SHTS

cce2436 dwg 070203 jpg

SUMMERLIN

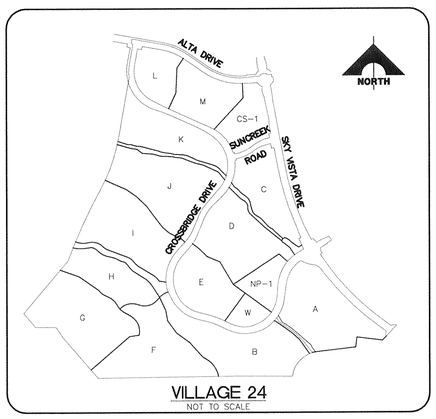
SM

VILLAGE 24
CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

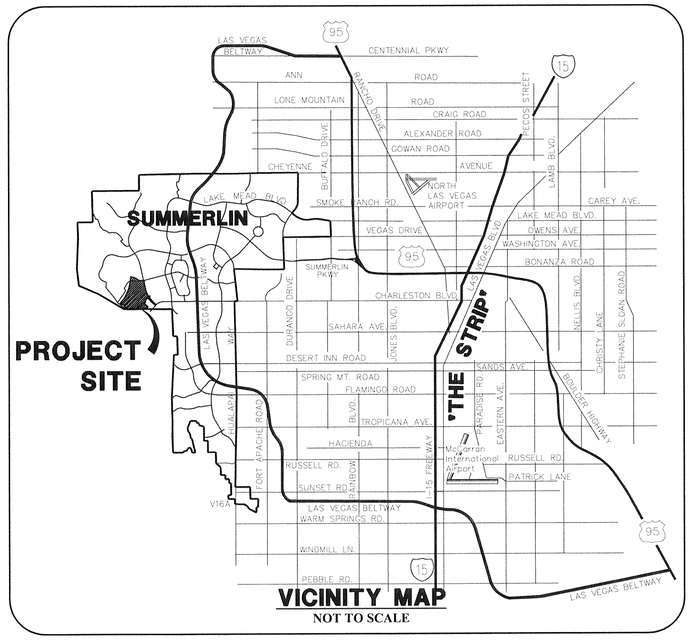
FROM CROSSBRIDGE UNIT 1 TO SUNCREEK ROAD

SID # 812 PROJECT 2
2014

A.P.N. 137-33-801-001



VILLAGE 24
NOT TO SCALE



OWNER/DEVELOPER

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

ENGINEER

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Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811 or 1-800-227-2600
AND CLARK COUNTY TRAFFIC OPERATIONS 1-702-455-6000

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

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

SHEET INDEX

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5	WATER MASTER PLAN
6	STORM DRAIN MASTER PLAN
7	SEWER MASTER PLAN
8	ROADWAY PLAN AND PROFILE 1
9	ROADWAY PLAN AND PROFILE 2
10	ROADWAY PLAN AND PROFILE 3
11	ROADWAY PLAN AND PROFILE 4
12	ROADWAY PLAN AND PROFILE 5
13	ROADWAY PLAN AND PROFILE 6
14	ROADWAY PLAN AND PROFILE 7
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DRAINAGE CERTIFICATION

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

JOSHUA L. JOHNSON P.E. 15789 DATE

ALLEN PAVELKA: PE, PE# 9029 DATE
CITY ENGINEER
CITY OF LAS VEGAS, NEVADA

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

CLV PLANNING DEPARTMENT

THIS PLAN MEETS THE APPLICABLE STANDARDS OF THE CITY OF LAS VEGAS PLANNING DEPARTMENT

CHRIS KNIGHT, DIRECTOR BUILDING AND SAFETY DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:
DRAWINGS: 1–3, 5–7, 16–23, 35, 37–41 & 52

THE HOWARD HUGHES COMPANY, LLC

KEVIN ORROCK DATE
VICE PRESIDENT

PLAN APPROVAL

NOTE: THIS PROJECT PLAN APPROVAL CONTINGENT ON

LVVWD #123259 VILLAGE 23A/24 SKY VISTA IMPROVEMENT PLANS

UTILITY/AGENCY APPROVALS

COX COMMUNICATIONS LAS VEGAS, INC. DATE

CENTRAL TELEPHONE CO., DBA CENTURYLINK DATE

THE AFFIXED CENTURYLINK APPROVAL DOES NOT ASSUME OR GUARANTEE LIABILITY FOR KNOWN OR UNKNOWN CONFLICTS WITH EXISTING OR PROPOSED IMPROVEMENTS. RESOLUTION OF ANY CONFLICT WILL BE ACCOMPLISHED PURSUANT TO LOCAL ORDINANCES, NEVADA REVISED STATUTES AND/OR PUBLIC UTILITY COMMISSION RULES AND REGULATIONS.

NV ENERGY DATE

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

NV ENERGY – TRANSMISSION ENGINEERING DATE

SOUTHWEST GAS CORP. DATE

PROFESSIONAL ENGINEER STATE OF NEVADA JOSHUA L. JOHNSON No. 15789 CIVIL
DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 13:18:04

G.C. WALLACE COMPANIES
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T: 702.804.2000 F: 702.804.2299 · GCWALLACE.COM
LAS VEGAS
F:\Projects\6FOD\62024-222\GWG\Production\24C82c01_CV.dwg
Paul Bremond

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS
COVER SHEET

DRAWING 1
1 OF 53 SHTS

SID NO. 812 PROJECT 2

24C82c01_dwg 07/20/3_pv

LEGEND

- PROPOSED UTILITIES
- EXISTING UTILITIES
- FUTURE UTILITIES
- SECTION LINE
- EASEMENT LINE
- RIGHT-OF-WAY LINE
- PROPERTY LINE
- CENTERLINE
- 100 YR HYDRAULIC GRADE LINE (ULT)
- 100 YR HYDRAULIC GRADE LINE (INT)
- PROPOSED UTILITY (BY OTHERS)
- PROPOSED SEWER LINE W/MH
- FUTURE SEWER LINE W/MH
- EXISTING SEWER LINE W/MH
- EXISTING WATER LINE & GATE VALVE
- PROPOSED WATER LINE & GATE VALVE
- FUTURE WATER LINE & GATE VALVE
- EXISTING GAS LINE (2" G)
- EXISTING UNDERGROUND ELECTRICAL (2-6" E)
- EXISTING CABLE TV (CATV)
- EXISTING TELEPHONE (TEL)
- EXISTING OVERHEAD AND POWER POLES (OHP)
- PROPOSED STORM DRAIN W/MH
- EXISTING STORM DRAIN W/MH
- FUTURE STORM DRAIN W/MH
- EXISTING SIDEWALK AND RAMP
- CONSTRUCT CURB DEPRESSION FOR FUTURE HANDICAP RAMP
- VIEW FENCE
- NEW ABANDONED PIPE
- EXISTING ABANDONMENT
- SAWCUT
- STEEL CASING
- APPROXIMATE PAVEMENT RESTORATION
- TO BE ABANDONED PROFILE HATCH
- WATER STUB WITH BLOW-OFF
- FUTURE WATER STUB WITH BLOW-OFF
- SEWER STUB WITH CAP
- FUTURE SEWER STUB WITH CAP
- EDGE OF PAVEMENT (OUTSIDE EDGE)
- CUT LIMIT LINE (C)
- FILL LIMIT LINE (F)

- DRAWING NUMBER FOR DETAIL W/ REF. TO THE SHEET WHERE IT IS SHOWN (1 / CD1)
- STANDARD DRAWING NUMBER (XX / YYY)
- GOVERNING AGENCY
- BENCHMARK
- POTHOLE LOCATION
- EXISTING NVR RS-100
- EXISTING DROP INLET
- PROPOSED DROP INLET
- FUTURE DROP INLET
- EXISTING GATE VALVE
- PROPOSED GATE VALVE
- FUTURE GATE VALVE
- EXISTING WATER METER
- PROPOSED WATER METER
- EXISTING TRAFFIC SIGNAL PULL BOX
- PROPOSED SIGNAL PULLBOX
- EXISTING TELEPHONE MANHOLE
- EXISTING POWER POLE
- EXISTING ELEC MARKER
- EXISTING TRAFFIC SIGNAL
- PROPOSED TRAFFIC SIGNAL
- EXISTING FIRE HYDRANT
- PROPOSED FIRE HYDRANT
- FUTURE FIRE HYDRANT
- EXISTING UTILITY BOX
- EXISTING METER BOX
- PROPOSED CONTOUR (3005)
- EXISTING CONTOUR (3005)
- SPOT ELEVATION (60.50 TC)
- EXISTING SPOT ELEVATION (60.50)
- FUTURE SPOT ELEVATION (60.50 TC)
- EXISTING CLARK COUNTY STREET LIGHT (STLT)
- ROAD SLOPE (1.00%)
- EXISTING SUMMERLIN STREET LIGHT (STLT)
- PROPOSED SUMMERLIN STREET LIGHT (STLT)
- 3:1 SLOPE UNLESS OTHERWISE NOTED ON PLAN (TOP SLOPE / TOE SLOPE)

ABBREVIATIONS

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

IMPROVEMENT NOTES:

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
6. SAWCUT AND REPLACE EXISTING A.C. PAVEMENT
7. INSTALL CONCRETE ENCASEMENT
8. EXISTING RIPRAP TO BE REMOVED AND STOCKPILED
9. INSTALL "L" TYPE ISLAND CURB PER USD DWG NO. 219
10. RELOCATE WATER APPURTENANCES (VALVES TO REMAIN ACCESSIBLE AT ALL TIMES)

WATER CONSTRUCTION NOTES:

1. INSTALL FIRE HYDRANT & ASSEMBLY PER UDACS PLT. NO. 39 & 40
2. INSTALL TEE/CROSS 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. 1" MAX. DEFLECTION (PVC), 2.5° MAX. DEFLECTION (DIP)
8. INSTALL STEEL CASING PER UDACS PLT. 22 & 23
9. INSTALL VERT. 45° BEND PER UDACS PLT. NO. 31 (*)
10. REMOVE CAP & BLOWOFF PER UDACS PLT. NO. 36 AND CONNECT TO EXISTING WATER LINE
11. INSTALL 6" MANUAL BLOW OFF ASSY PER UDACS PLT. NO. 37
12. INSTALL 4" COMBINATION AIR VALVE PER UDACS PLT. NO. 38
13. INSTALL 1 1/2" TYPE K COPPER W/SERVICE SADDLE, 1 1/2" METER & 1 1/2 RPPA PER UDACS PLATE NO. 4 & 8.

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

SEWER CONSTRUCTION NOTES:

1. INSTALL 48" SEWER MANHOLE
2. INSTALL TEMPORARY PLUG AND CAP SEWER STUB
3. REMOVE EXISTING PLUG AND CONNECT TO EXISTING SEWER LINE
4. INSTALL CORROSION PROTECTION PER DCSWCS 3.16.8B AND 4.9.9

1A. INSTALL 60" SEWER MANHOLE

STORM DRAIN CONSTRUCTION NOTES:

1. INSTALL TYPE "CM2" DROP INLET PER USD DWG. NO. 412.1 AND 421
2. INSTALL TYPE I 60" MANHOLE PER USD DWG. NO. 403
3. INSTALL TYPE III MANHOLE PER USD DWG. NO. 406
4. INSTALL TYPE II-SD MANHOLE PER USD DWG. NO. 405.2
5. INSTALL WATER TIGHT ELASTOMERIC JOINTS PER UDACS 2.22.02
6. INSTALL TEMPORARY PLUG AND CAP STORM DRAIN LINE
7. CULVERT HEADWALL (SEE DETAIL XX ON SHEET X)
8. REMOVE EXISTING PLUG AND CONNECT TO EXISTING STORM DRAIN LINE

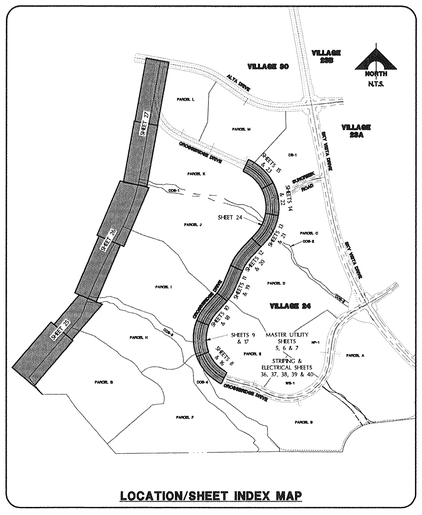
** CONTRACTOR TO VERIFY SIZE, INVERT, AND LOCATION OF EXISTING STORM DRAIN LINE

IRRIGATION CONSTRUCTION NOTES:

1. BANK "A": 1-6" & 2-4" SCH 40 PVC PER DETAIL 1 ON SHEET 29
2. BANK "B" : 2-4" SCHD. 40 PVC PER DETAIL 2 ON SHEET 29

DEVIATIONS FROM STANDARDS

1. ADD RAISED MEDIAN TO NEIGHBORHOOD COLLECTOR LEVEL 2 (PER S.I.S. DWG NO S-6) TO ENHANCE MARKETING AND SALES ENTRIES INTO VILLAGE 24. RIGHT-OF-WAY (BC-BC) EXPANDS TO 67.34 FEET TO 84.00 FEET (AS MEDIAN ISLAND VARIES), IN LIEU OF 64.00 FEET. TRAVEL LANES REMAIN UNCHANGED.
2. REDUCE LANDSCAPE MEDIAN ISLAND IN FUTURE "GATED" PARCEL ENTRIES (PER S.I.S. DWG NO S-12A) FROM 15.00 FEET TO 13.34 FEET, IN EXCHANGE FOR WIDER COMMON AREAS WHICH ARE PROPOSED 20 FEET WIDE IN LIEU OF 15 FEET. THIS ADDITIONAL AREA WILL BE UTILIZED FOR GRADING AND SLOPE ADJUSTMENTS. CORRESPONDINGLY, THE RIGHT-OF-WAY IS REDUCED FROM 64.00 FEET TO 61.34 FEET. TRAVEL LANES REMAIN UNCHANGED.
3. STREET LIGHTS, AT ALL FUTURE PARCEL ENTRIES, WILL BE SET AT 10 FEET OUTSIDE OF BCR AND 2.5 FEET OF BC (IN LIEU OF LOCATIONS SET PER S.I.S. E-16 FOR MEANDERING SIDEWALK). THIS WILL ALLOW ADJUSTMENTS TO PARCEL ENTRIES WITHOUT AFFECTING STREET LIGHT LOCATIONS.



LOCATION/SHEET INDEX MAP

NOTES TO CONTRACTOR:

1. ALL EXISTING UTILITY CROSSINGS MUST BE VERIFIED PRIOR TO CONSTRUCTION OF ANY MAIN LINES OR LATERALS THAT MAY BE ADVERSELY AFFECTED. ANY DISCREPANCIES IN LOCATION AND/OR ELEVATION MUST BE PROVIDED TO THE ENGINEER FOR ACCEPTANCE PRIOR TO CONSTRUCTION.
2. ALL COMMON LOTS AS SHOWN HEREIN TO BE PRIVATELY MAINTAINED BY THE SUMMERLIN H.O.A. A FUTURE MEANDERING SIDEWALK WILL BE INSTALLED BY SUMMERLIN AS REQUIRED TO SERVICE THE DEVELOPMENT OF EACH PARCEL.
3. ALL WATER LINE GATE VALVES, SERVICE GATE VALVES, AND FIRE HYDRANT GATE VALVES ARE TO BE CONSTRUCTED UNDER A.C. PAVEMENT. IT IS THE CONTRACTORS RESPONSIBILITY TO VERIFY THAT ALL WATER VALVE CANS DO NOT CREATE CONFLICTS WITH THE PROPOSED CURB LINE PRIOR TO PLACEMENT OF CONCRETE. ALL WATER FACILITIES SHOWN IN THESE DRAWINGS HAVE BEEN "SCALED-UP" FOR CLARITY ONLY.

SUMMERLIN STREET CLASSIFICATION

CROSSBRIDGE DRIVE: NEIGHBORHOOD COLLECTOR LEVEL 1 AND LEVEL 2 WITH SHARED BIKE LANES

STREET QUANTITIES (PUBLIC)

STREETS	
3" A.C. PAVEMENT	22,131 S.Y.
4" TYPE II AGGREGATE	2,871 C.Y.
8" TYPE "A" ISLAND CURB	3,883 L.F.
6" TYPE "L" CURB & GUTTER	7,466 L.F.
EXCAVATION	10,990 C.Y.
EMBANKMENT	133,591 C.Y.
ADJUST EXISTING FACILITIES TO GRADE	0 EA.
STREET LIGHTS	
SINGLE ARM ST. LT.	14 EA.
DOUBLE ARM ST. LT.	11 EA.
CONDUIT	5,108 L.F.
IRRIGATION	
IRRIGATION SLEEVES – BANK "A"	271 L.F.
IRRIGATION SLEEVES – BANK "B"	138 L.F.

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

Call before you Dig — Avoid cutting underground utility lines. It's costly. Call 811 or 1-800-227-2600 OR CLARK COUNTY TRAFFIC OPERATIONS 1-702-455-6000

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

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS

BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT NO. 123547 DATE:

JOSHUA L. JOHNSON — STATE OF NEVADA — 15757 — CIVIL — PROFESSIONAL ENGINEER — 10/09/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE

PROJECT NO. 62024-222

DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-09-15
PLOT TIME: 11:25:24

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD. LAS VEGAS, NV 89146
T:702.476.4500 F:702.804.2799 GCWALLACE.COM
LAS VEGAS

F:\Projects\600\62024-222\DWG production\24x36z02_PID.dwg
Michael Fang

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

PROJECT DATA SHEET

DRAWING 2
2 OF 53 SHTS

SID NO. 812 PROJECT 2

24x36.dwg 10/09/15 jsp

CITY OF LAS VEGAS SEWER NOTES

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

REVISED 04/15/10

FLOOD ZONE NOTE

NO PORTION OF THE SITE FALLS WITHIN A FEMA DESIGNATED SPECIAL FLOOD HAZARD AREA. SITE LOCATED ON PANEL 32003C2150E, DATED SEPTEMBER 27, 2002, TO REFLECT A LOMR. THIS PANEL SHOWS THAT THE PROJECT IS LOCATED WITHIN A ZONE X AND NOT LOCATED WITHIN A FEMA DESIGNATED 100-YEAR ZONE A OR SPECIAL FLOOD HAZARD AREA.

LAS VEGAS VALLEY WATER DISTRICT (LVVWD) STANDARD NOTES

LVVWD PROJECTS #___123547___

1. NO WORK SHALL BEGIN UNTIL THE WATER PLANS HAVE BEEN APPROVED FOR CONSTRUCTION BY THE LVVWD. FOLLOWING WATER PLAN APPROVAL, NOTICE SHALL BE GIVEN TO THE LVVWD COMMUNICATION SUPPORT CENTER (258-7171) TWO (2) WORKING DAYS PRIOR TO THE START OF CONSTRUCTION. FOR FUTURE INSPECTIONS, NOTICE MUST BE GIVEN BY 2:00 P.M. THE BUSINESS DAY PRIOR TO THE REQUESTED LVVWD INSPECTION. WHEN REQUESTING INSPECTIONS, PLEASE REFER TO THE PROJECT # IDENTIFIED ABOVE
2. ALL WORK SHALL CONFORM TO LVVWD STANDARD PLATES, DRAWINGS, AND SPECIFICATIONS, AND TO THE 2010 EDITION OF THE UNIFORM DESIGN AND CONSTRUCTION STANDARDS FOR POTABLE WATER SYSTEMS (UDACS). THE LATEST EDITION OF UDACS SHALL SUPERSEDE ANY CONFLICTS CONTAINED IN THE APPROVED DRAWINGS AND/OR SPECIFICATIONS.
3. ALL WORK, EXCEPT AS MODIFIED BY THESE PLANS OR BY NOTE 2 ABOVE, SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT DRAFT OR EDITION OF THE UNIFORM SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION OFFSITE IMPROVEMENT, CLARK COUNTY AREA.
4. A SINGLE PIPE MATERIAL SHALL BE USED THROUGHOUT THE PROJECT UNLESS OTHERWISE APPROVED BY THE LVVWD.
5. ALL SERVICE LATERALS TWO (2) INCHES IN DIAMETER AND SMALLER SHALL BE TYPE K COPPER TUBING WITH LVVWD APPROVED SERVICE SADDLES.
6. ALL WATER METER BOXES SHALL BE LOCATED OUTSIDE OF DRIVEWAY AREAS.
7. ALL VALVES SHALL BE LOCATED OUTSIDE OF DRIVEWAYS, VALLEY AND CURB GUTTERS.
8. ALL WATER AND STORM DRAIN OR SANITARY SEWER CROSSINGS SHALL CONFORM TO SECTION 2.22 OF THE 2010 EDITION OF THE UDACS
9. ALL WATER FACILITIES SHALL BE FILLED, DISINFECTED, PRESSURE TESTED, FLUSHED, FILLED, AND AN ACCEPTABLE WATER SAMPLE OBTAINED, PRIOR TO CONNECTION TO THE LVVWD DISTRIBUTION SYSTEM.
10. THE CONTRACTOR MUST OBTAIN ALL METERS TWO (2) INCHES AND SMALLER FROM LVVWD CENTRAL STORES. TELEPHONE 258-3152 OR 258-3802, TWO (2) WORKING DAYS PRIOR TO METER PICKUP.
11. ANY INTERRUPTION OF SERVICE MUST BE PERFORMED IN ACCORDANCE WITH UDACS SECTION 3.14.01, AND APPROVED BY THE LVVWD INSPECTION DIVISION PRIOR TO SHUTDOWN. PROPER WRITTEN NOTIFICATION MUST BE GIVEN TO ALL AFFECTED CUSTOMERS.
12. ALL WATER FACILITY CONSTRUCTION MATERIALS USED MUST BE LISTED ON THE LVVWD PRE-APPROVED MATERIALS AND MANUFACTURER'S LISTING FOR NEW FACILITIES, LATEST REVISION, OR SPECIFICALLY APPROVED ON THESE PLANS.
13. TELEPHONE "CALL BEFORE YOU DIG" AT 811 OR 1-800-227-2600
14. THE INSTALLATION OF LAS VEGAS VALLEY WATER DISTRICT (LVVWD) MUNICIPAL WATER FACILITIES WITHIN ALL STREETS IS ASSUMED TO BE IN COMPLIANCE WITH THE UNIFORMED STANDARDS, INCLUDING THE PLACEMENT OF ASPHALT PAVING STREET SURFACES. ANY REPAIR WORK DONE BY THE LVVWD TO THE MUNICIPAL WATER FACILITIES WILL INCLUDE THE PLACEMENT OF AN APPROPRIATELY SIZED ASPHALT REPAIR ON THE STREET SURFACE. ANY DECORATIVE PAVING SURFACE WITHIN THE STREET IS THE RESPONSIBILITY OF THE OWNER'S ASSOCIATION, OR THE INDIVIDUAL PROPERTY OWNERS IF NO OWNER'S ASSOCIATION IS IN EXISTENCE, OR THE AGENCY HAVING JURISDICTION. DECORATIVE SURFACE MATERIALS PLACED WITHIN THE TEN FOOT EASEMENT ABUTTING A PUBLIC OR PRIVATE STREET, IF DISTURBED BY THE LVVWD DURING THE REPAIR OR OPERATION OF THIS FACILITIES, WILL BE REPLACED BY LVVWD WITH AN APPROPRIATELY SIZED PLAIN FINISH CONCRETE PATCH. THE LVVWD WILL NOT RESTORE, AND WILL NOT BE RESPONSIBLE FOR THE RESTORATION OF, ANY DECORATIVE PAVING SURFACE WITHIN THE STREET. THE LVVWD WILL NOT ATTEMPT TO MATCH COLOR OR FINISH OF ANY ADJACENT MATERIALS.

ADDITIONAL WATER NOTES:

1. INSTALL PIPELINE MARKER BALLS IN TRENCH ABOVE EACH HORIZONTAL ELBOW FITTING, PER UDACS PLATE #15.
2. ADJUST ALL EXISTING WATER APPURTENANCES TO FINISHED GRADE PER UDACS SPECIFICATIONS. (VALVES SHALL BE ACCESSIBLE AT ALL TIMES.)
3. RELOCATE TEST STATIONS AND FIBER OPTIC PULL BOXES BEHIND BACK OF CURB WHERE REQUIRED PER DETAILS AND NOTES AS DESIGNATED.
4. THE DISTRICT CANNOT GUARANTEE A WATERTIGHT SHUTDOWN WHERE CONNECTIONS OR REPAIRS TO EXISTING FACILITIES ARE REQUIRED. THE CONTRACTOR SHALL ENSURE ALL LABOR AND EQUIPMENT IS AVAILABLE TO REMOVE FUGITIVE WATER THAT MAY IMPEDE CONSTRUCTION AT ALL TIMES. COORDINATION WITH INSPECTION DIVISION MUST TAKE PLACE PRIOR TO ANY TRIAL SHUTDOWN.
5. CONTRACTOR TO INSTALL TEMPORARY SERVICE TO ENSURE PROPER SHUTDOWN IN THE EVENT NO OTHER APPURTENANCES ARE AVAILABLE.
6. TREES, SHRUBS OR DECORATIVE ROCKS, AND ANY BLOCK WALL OR OTHER FENCE MATERIAL, SHALL BE DESIGNED AND CONSTRUCTED AROUND THE EASEMENT(S) TO ALLOW THE DISTRICT DIRECT ACCESS TO THE VAULT(S), BACKFLOW ASSEMBLIES AND PIPING FROM THE ADJACENT RIGHT-OF-WAY.

CITY OF LAS VEGAS GRADING NOTES

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

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

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

7. ALL CUT AND FILL SLOPES SHALL BE PROTECTED UNTIL EFFECTIVE EROSION CONTROL HAS BEEN ESTABLISHED.
8. THE USE OF POTABLE WATER WITHOUT A SPECIAL PERMIT FOR BUILDING OR CONSTRUCTION PURPOSES INCLUDING CONSOLIDATION OF BACKFILL OR DUST CONTROL IS PROHIBITED. THE CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS FOR CONSTRUCTION WATER.
9. THE CONTRACTOR SHALL MAINTAIN THE STREETS, SIDEWALKS AND ALL OTHER PUBLIC RIGHT-OF-WAY IN A CLEAN, SAFE AND USABLE CONDITION. ALL SPILLS OF SOIL, ROCK OR CONSTRUCTION DEBRIS SHALL BE PROMPTLY REMOVED FROM THE PUBLICLY OWNED PROPERTY DURING CONSTRUCTION AND UPON COMPLETION OF THE PROJECT. ALL ADJACENT PROPERTY, PRIVATE OR PUBLIC SHALL BE MAINTAINED IN A CLEAN, SAFE AND USABLE CONDITION.
10. IN THE EVENT THAT ANY TEMPORARY CONSTRUCTION ITEM IS REQUIRED THAT IS NOT SHOWN ON THESE DRAWINGS, SUCH ITEM SHALL BE PROVIDED, AS DIRECTED BY THE CITY ENGINEER, AT NO EXPENSE TO THE CITY OF LAS VEGAS. TEMPORARY CONSTRUCTION INCLUDES DITCHES, BERMS, ROAD SIGNS AND BARRICADES, ETC.

REVISED 4/15/10

STORMWATER RUNOFF MANAGEMENT

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

CONDITIONAL APPROVAL OF VALVED OUTLET (6" AND LARGER)

THE WATER PLANS SHOW ONE OR MORE VALVED OUTLETS EXTENDING OUT OF PAVED AREAS. INSTALLATION OF THESE OUTLETS IS ACCEPTABLE. HOWEVER, IF THE OUTLETS ARE INCORRECTLY LOCATED OR NOT USED FOR ANY REASON WHEN THE PROPERTY IS ACTUALLY DEVELOPED, THE DEVELOPER SHALL ABANDON THE OUTLETS AT THE CONNECTION TO THE ACTIVE MAIN IN ACCORDANCE WITH THE DISTRICT'S STANDARDS AND AT THE DEVELOPER'S EXPENSE. APPROVAL OF THE VALVED OUTLET DOES NOT PROVIDE OR IMPLY A WATER COMMITMENT.

WATER MAIN JOINT NOTES (DIP, 4"-12"):

DIP PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE TWO AND ONE-HALF (2.5) DEGREES PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 415 FEET MIN. FOR 18' SECTIONS, 460 FEET MIN FOR 20' SECTIONS PER UDACS 2.07.03.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

WATER MAIN JOINT NOTES (PVC, 4"-24"):

PVC PIPE SHALL BE DEFLECTED AT THE JOINT ONLY. THE MAXIMUM ALLOWABLE DEFLECTION SHALL BE ONE (1) DEGREE PER JOINT WITH A MINIMUM RADIUS OF CURVATURE OF 1,150 FEET, PER UDACS 2.07.01 AND 2.07.02.

FOR CHANGES IN DIRECTION EXCEEDING THE MAXIMUM ALLOWABLE JOINT DEFLECTION, FITTINGS SHALL BE USED.

REDUCED PRESSURE PRINCIPLE ASSEMBLY, (1) 1-1/2"

APPROVED REDUCED PRESSURE PRINCIPLE ASSEMBLY(S) SHALL BE INSTALLED PER THE UDACS PLATE NO. 8. NO WATER SHALL BE TAKEN FROM A SERVICE REQUIRING BACKFLOW PREVENTION UNTIL THE REDUCED PRESSURE PRINCIPLE ASSEMBLY HAS BEEN SUCCESSFULLY TESTED BY THE LVVWD. ANY BLOCK WALL OR OTHER FENCE MATERIAL SHALL BE DESIGNED AND CONSTRUCTED AROUND THE OUTSIDE OF THE EASEMENT(S), TO ALLOW THE DISTRICT DIRECT ACCESS FROM THE ADJACENT RIGHT-OF-WAY. EASEMENTS SHALL BE CLEARLY MARKED OR STAKED PRIOR TO THE START OF CONSTRUCTION.

CITY OF LAS VEGAS TRAFFIC NOTES

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

REVISED 4/15/10

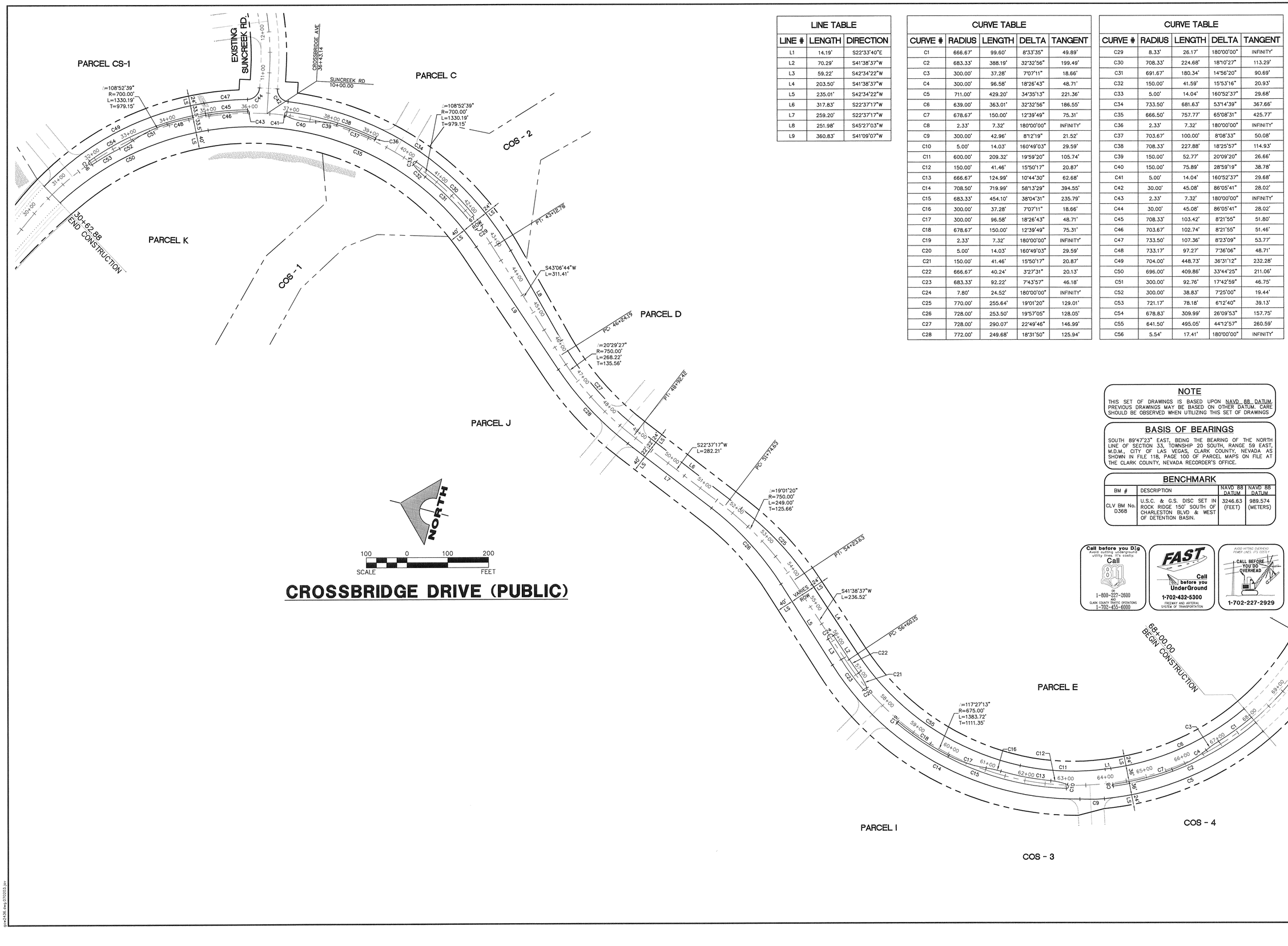
CITY OF LAS VEGAS STREETLIGHT NOTES

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

REVISED 04/15/10

LAS VEGAS FIRE AND RESCUE GENERAL NOTES

1. ALL WORK SHALL BE DONE IN STRICT ACCORDANCE WITH THE LAS VEGAS FIRE AND RESCUE ADOPTED FIRE CODE ORDINANCE #6325 FOR HYDRANT SPECIFICATIONS AND HYDRANT INSTALLATION SPECIFICATIONS.
2. AUTHORIZED FIRE HYDRANTS ARE AS FOLLOWS:
   A. KENNEDY - GUARDIAN MODELS K81A AND K81D
   B. MUELLER - SUPER CENTURION 250 MODEL A-423
   C. CLOW - MEDALLION MODEL F-2546LVD
   D. U.S. PIPE - METROFLOW/M-03
3. A PERMIT IS REQUIRED FROM LAS VEGAS FIRE AND RESCUE FOR THE INSTALLATION OF ON-SITE WATER LINES AND FIRE HYDRANTS. THE PERMIT AND CONTRACTORS MATERIAL TEST CERTIFICATE FOR UNDERGROUND PIPING FORM SHALL BE OBTAINED FROM THE FIRE PROTECTION ENGINEER BEFORE COMMENCEMENT OF WORK. [IFC §105.7.12]
4. ON ANY RESIDENTIAL OR COMMERCIAL INSTALLATIONS, FIRE HYDRANTS SHALL BE INSTALLED AND FIRE APPARATUS ACCESS ROADS SHALL BE MAINTAINED BEFORE COMMENCEMENT OF ANY COMBUSTIBLE CONSTRUCTION. ALL FIRE HYDRANTS SHALL BE IN GOOD WORKING ORDER AND SHALL BE CAPABLE OF DELIVERING THE REQUIRED FIRE FLOW. [IFC §3310, §3312]
5. TO IDENTIFY THE FIRE HYDRANT LOCATIONS, THE CONTRACTOR SHALL PLACE A BLUE REFLECTIVE MARKER AT THE CENTER LINE OF THE STREET ADJACENT TO THE FIRE HYDRANTS. [IFC §507.5.7.3]
6. ALL UNDERGROUND INSPECTIONS, PRESSURE AND FLUSH VERIFICATIONS OF ALL FIRE HYDRANTS AND FIRE LINES, SHALL BE CONDUCTED BEFORE COVERING THE LINES. CENTER LOADING IS ACCEPTABLE FOR THE HYDRO TESTS WITH PRIOR FIRE PREVENTION APPROVAL. [IFC §106.3]
7. ALL ON-SITE UNDERGROUND WATER MAINS AND MATERIALS SHALL BE U.L. LISTED, A.W.W.A. APPROVED AND SHALL BE RATED FOR THE APPROPRIATE WORKING PRESSURE. [IFC §507.2.1, NFPA 24]
8. PAINTING OF CURBS, FIRE HYDRANTS, PADS, PROTECTION OF FIRE HYDRANTS FROM PHYSICAL DAMAGE, AND ALL OTHER WORK NECESSARY PER PLANS SHALL BE COMPLETED BEFORE APPROVAL BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION. [IFC §507]
9. PRIVATE FIRE HYDRANTS SHALL BE PAINTED RED. [IFC §507.5.7.1]
10. PRIOR TO THE FINAL OCCUPANCY, A FIRE FLOW TEST SHALL BE WITNESSED BY LAS VEGAS FIRE AND RESCUE, FIRE PREVENTION DIVISION TO VERIFY AVAILABILITY OF THE REQUIRED FIRE FLOW. [IFC §507]
11. FIRE HYDRANTS SPACING SHALL BE AS FOLLOWS: [IFC §C102]
    RESIDENTIAL - 500 FT UNSPRINKLERED; 600 FT SPRINKLERED.
    COMMERCIAL - 300 FT UNSPRINKLERED; 400 FT SPRINKLERED.
12. WHERE NEW WATER MAINS ARE EXTENDED ALONG STREETS OR NEW STREETS ARE INSTALLED WHERE FIRE HYDRANTS ARE NOT NEEDED FOR PROTECTION OF THE STRUCTURES, FIRE HYDRANTS SHALL BE INSTALLED AT A MAXIMUM 1,000 FT SPACING, TO PROVIDE FOR TRANSPORTATION HAZARDS. WHERE STREETS ARE PROVIDED WITH MEDIAN DIVIDERS OR HAVE FOUR (4) OR MORE TRAFFIC LANES AND HAVE A TRAFFIC COUNT OF MORE THAN 30,000 PER DAY, HYDRANTS ARE REQUIRED ON EACH SIDE OF THE STREET SPACED AT 500 FEET ON AN ALTERNATING BASIS. [IFC §C102.8]
13. NO FIRE



CROSSBRIDGE DRIVE (PUBLIC)

LINE TABLE		
LINE #	LENGTH	DIRECTION
L1	14.19'	S22°33'40"E
L2	70.29'	S41°38'37"W
L3	59.22'	S42°34'22"W
L4	203.50'	S41°38'37"W
L5	235.01'	S42°34'22"W
L6	317.83'	S22°37'17"W
L7	259.20'	S22°37'17"W
L8	251.98'	S45°27'03"W
L9	360.83'	S41°09'07"W

CURVE TABLE				
CURVE #	RADIUS	LENGTH	DELTA	TANGENT
C1	666.67'	99.60'	8°33'35"	49.89'
C2	683.33'	388.19'	32°32'56"	199.49'
C3	300.00'	37.28'	7°07'11"	18.66'
C4	300.00'	96.58'	18°26'43"	48.71'
C5	711.00'	429.20'	34°35'13"	221.36'
C6	639.00'	363.01'	32°32'56"	186.55'
C7	678.67'	150.00'	12°39'49"	75.31'
C8	2.33'	7.32'	180°00'00"	INFINITY'
C9	300.00'	42.96'	8°12'19"	21.52'
C10	5.00'	14.03'	160°49'03"	29.59'
C11	600.00'	209.32'	19°59'20"	105.74'
C12	150.00'	41.46'	15°50'17"	20.87'
C13	666.67'	124.99'	10°44'30"	62.68'
C14	708.50'	719.99'	58°13'29"	394.55'
C15	683.33'	454.10'	38°04'31"	235.79'
C16	300.00'	37.28'	7°07'11"	18.66'
C17	300.00'	96.58'	18°26'43"	48.71'
C18	678.67'	150.00'	12°39'49"	75.31'
C19	2.33'	7.32'	180°00'00"	INFINITY'
C20	5.00'	14.03'	160°49'03"	29.59'
C21	150.00'	41.46'	15°50'17"	20.87'
C22	666.67'	40.24'	3°27'31"	20.13'
C23	683.33'	92.22'	7°43'57"	46.18'
C24	7.80'	24.52'	180°00'00"	INFINITY'
C25	770.00'	255.64'	19°01'20"	129.01'
C26	728.00'	253.50'	19°57'05"	128.05'
C27	728.00'	290.07'	22°49'46"	146.99'
C28	772.00'	249.68'	18°31'50"	125.94'

CURVE TABLE				
CURVE #	RADIUS	LENGTH	DELTA	TANGENT
C29	8.33'	26.17'	180°00'00"	INFINITY'
C30	708.33'	224.68'	18°10'27"	113.29'
C31	691.67'	180.34'	14°56'20"	90.69'
C32	150.00'	41.59'	15°53'16"	20.93'
C33	5.00'	14.04'	160°52'37"	29.68'
C34	733.50'	681.63'	53°14'39"	367.66'
C35	666.50'	757.77'	65°08'31"	425.77'
C36	2.33'	7.32'	180°00'00"	INFINITY'
C37	703.67'	100.00'	8°08'33"	50.08'
C38	708.33'	227.88'	18°25'57"	114.93'
C39	150.00'	52.77'	20°09'20"	26.66'
C40	150.00'	75.89'	28°59'19"	38.78'
C41	5.00'	14.04'	160°52'37"	29.68'
C42	30.00'	45.08'	86°05'41"	28.02'
C43	2.33'	7.32'	180°00'00"	INFINITY'
C44	30.00'	45.08'	86°05'41"	28.02'
C45	708.33'	103.42'	8°21'55"	51.80'
C46	703.67'	102.74'	8°21'55"	51.46'
C47	733.50'	107.36'	8°23'09"	53.77'
C48	733.17'	97.27'	7°36'06"	48.71'
C49	704.00'	448.73'	36°31'12"	232.28'
C50	696.00'	409.86'	33°44'25"	211.06'
C51	300.00'	92.76'	17°42'59"	46.75'
C52	300.00'	38.83'	7°25'00"	19.44'
C53	721.17'	78.18'	6°12'40"	39.13'
C54	678.83'	309.99'	26°09'53"	157.75'
C55	641.50'	495.05'	44°12'57"	260.59'
C56	5.54'	17.41'	180°00'00"	INFINITY'

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS

BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

Call before you Dig
Avoids cutting underground utility lines. It's costly.
Call 811
or
1-800-227-2600
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

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

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

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 10:58:42
F:\Projects\620\62024-222\DWG\Production\24CB2c04_HZ.dwg
Paul Brennard

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

THE HOWARD HUGHES COMPANY, LLC

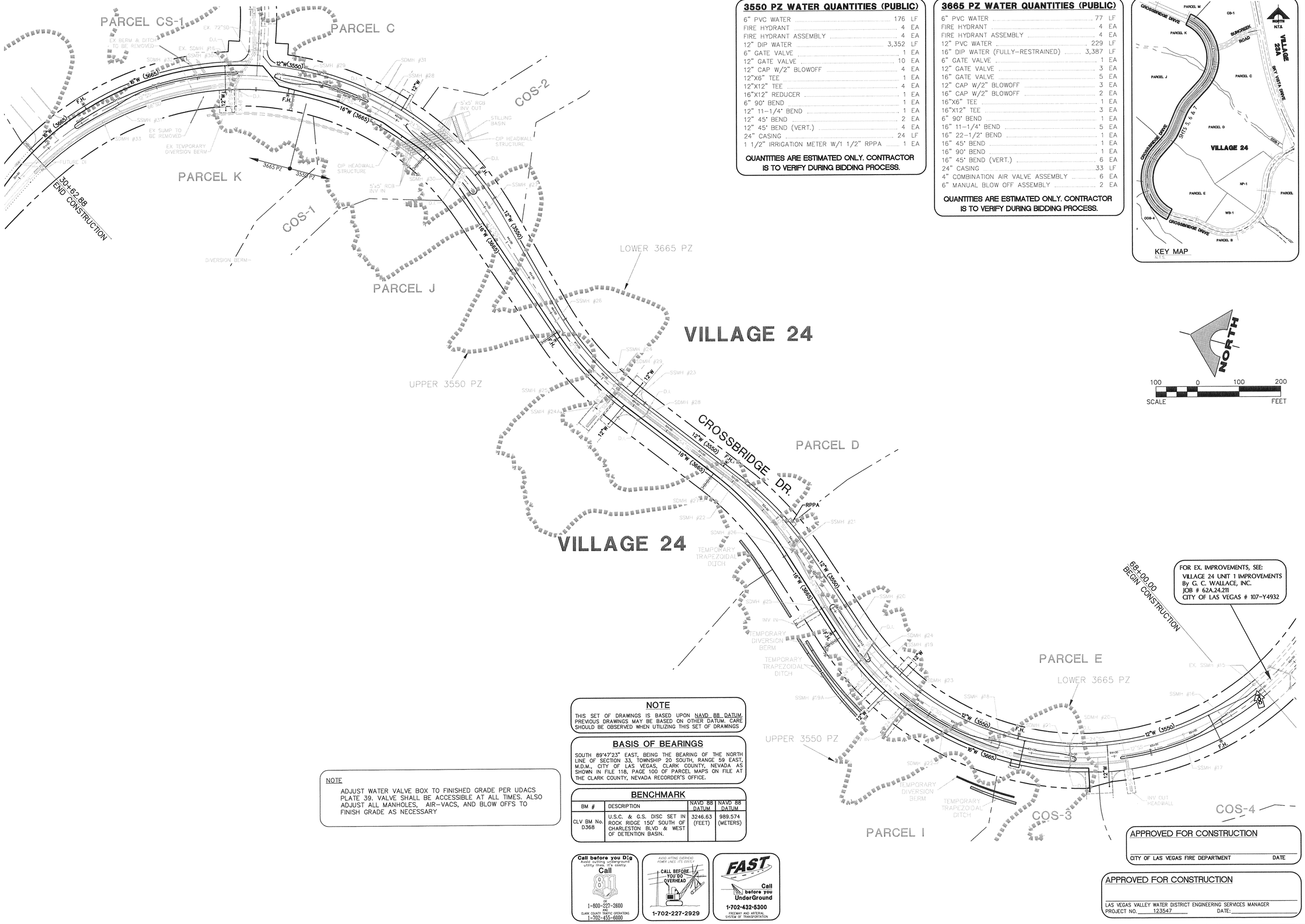
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS

HORIZONTAL CONTROL PLAN

DRAWING 4
4 OF 53 SHTS

SID NO. 812 PROJECT 2

cse7436.dwg 070023.pw



3550 PZ WATER QUANTITIES (PUBLIC)

6" PVC WATER	176	LF
FIRE HYDRANT	4	EA
FIRE HYDRANT ASSEMBLY	4	EA
12" DIP WATER	3,352	LF
6" GATE VALVE	1	EA
12" GATE VALVE	10	EA
12" CAP W/2" BLOWOFF	4	EA
12"X6" TEE	1	EA
12"X12" TEE	4	EA
16"X12" REDUCER	1	EA
6" 90° BEND	1	EA
12" 11-1/4° BEND	1	EA
12" 45° BEND	2	EA
12" 45° BEND (VERT.)	4	EA
24" CASING	24	LF
1 1/2" IRRIGATION METER W/1 1/2" RPPA	1	EA

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

3665 PZ WATER QUANTITIES (PUBLIC)

6" PVC WATER	77	LF
FIRE HYDRANT	4	EA
FIRE HYDRANT ASSEMBLY	4	EA
12" PVC WATER	229	LF
16" DIP WATER (FULLY-RESTRAINED)	3,387	LF
6" GATE VALVE	1	EA
12" GATE VALVE	3	EA
16" GATE VALVE	5	EA
12" CAP W/2" BLOWOFF	3	EA
16" CAP W/2" BLOWOFF	2	EA
16"X6" TEE	1	EA
16"X12" TEE	3	EA
6" 90° BEND	1	EA
16" 11-1/4° BEND	5	EA
16" 22-1/2° BEND	1	EA
16" 45° BEND	1	EA
16" 90° BEND	1	EA
16" 45° BEND (VERT.)	6	EA
24" CASING	33	LF
4" COMBINATION AIR VALVE ASSEMBLY	6	EA
6" MANUAL BLOW OFF ASSEMBLY	2	EA

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

KEY MAP
N.T.S.

NORTH

100 0 100 200
SCALE FEET

NOTE

ADJUST WATER VALVE BOX TO FINISHED GRADE PER UDACS PLATE 39. VALVE SHALL BE ACCESSIBLE AT ALL TIMES. ALSO ADJUST ALL MANHOLES, AIR-VACS, AND BLOW OFFS TO FINISH GRADE AS NECESSARY

NOTE

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

APPROVED FOR CONSTRUCTION

CITY OF LAS VEGAS FIRE DEPARTMENT DATE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

STATE OF NEVADA — PROFESSIONAL ENGINEER — JOSHUA L. JOHNSON — No. 15708 — CIVIL
DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
	AGEN APP	DATE
	GCW APP	DATE

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-06-15
PLOT TIME: 11:03:49

G.C. WALLACE COMPANIES
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LAS VEGAS

F:\Projects\600\62024-222\DWG\Production\24282d05_MU1.dwg
Lupe Garcia

THE HOWARD HUGHES COMPANY, LLC

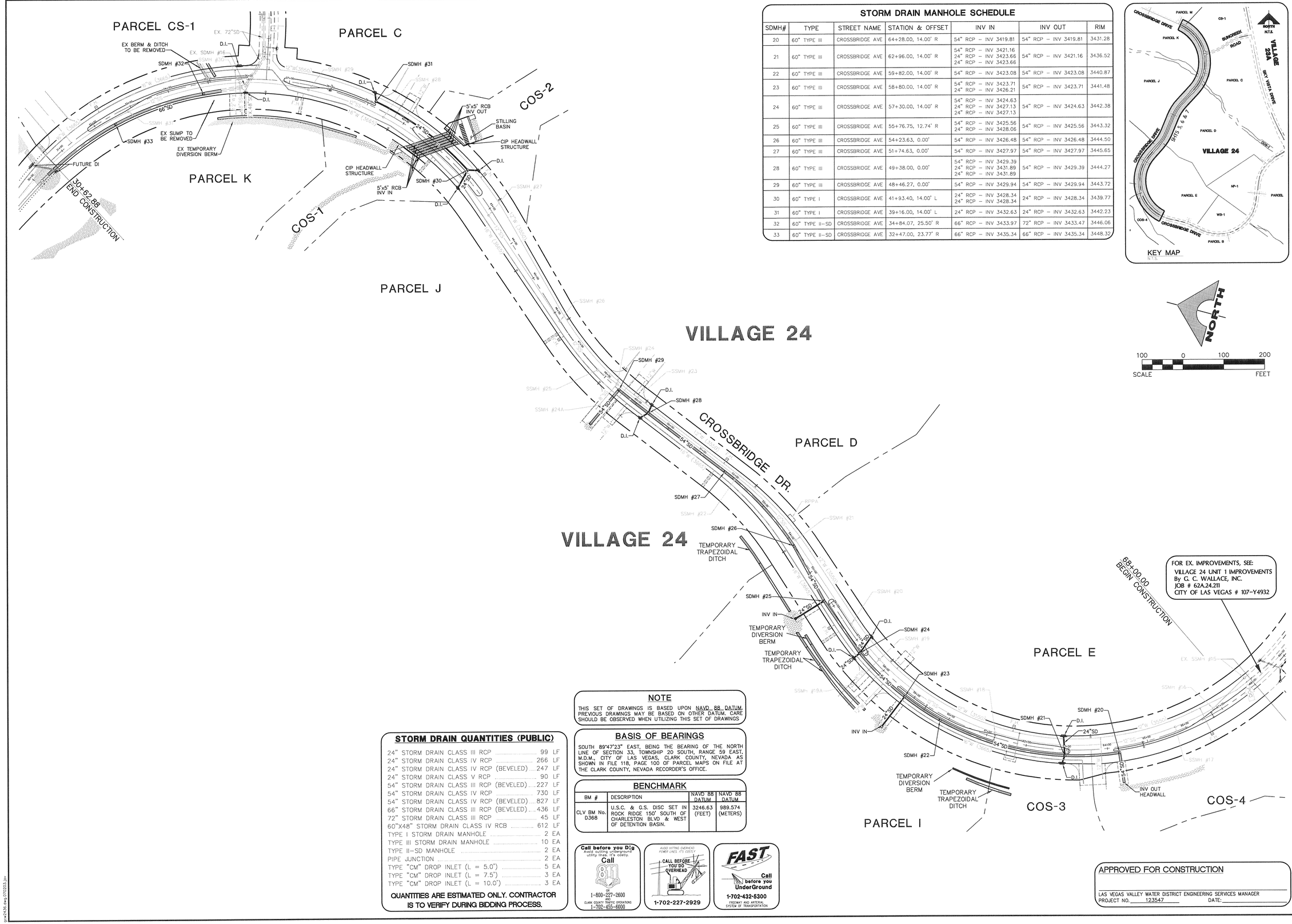
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS

WATER MASTER PLAN

DRAWING 5
5 OF 53 SHTS

SID NO. 812 PROJECT 2

gc=24.36.dwg 070203.pl=



STORM DRAIN MANHOLE SCHEDULE

SDMH#	TYPE	STREET NAME	STATION & OFFSET	INV IN	INV OUT	RIM
20	60" TYPE III	CROSSBRIDGE AVE	64+28.00, 14.00' R	54" RCP – INV 3419.81	54" RCP – INV 3419.81	3431.28
21	60" TYPE III	CROSSBRIDGE AVE	62+96.00, 14.00' R	54" RCP – INV 3421.16 24" RCP – INV 3423.66 24" RCP – INV 3423.66	54" RCP – INV 3421.16	3436.52
22	60" TYPE III	CROSSBRIDGE AVE	59+82.00, 14.00' R	54" RCP – INV 3423.08	54" RCP – INV 3423.08	3440.87
23	60" TYPE III	CROSSBRIDGE AVE	58+80.00, 14.00' R	54" RCP – INV 3423.71 24" RCP – INV 3426.21	54" RCP – INV 3423.71	3441.48
24	60" TYPE III	CROSSBRIDGE AVE	57+30.00, 14.00' R	54" RCP – INV 3424.63 24" RCP – INV 3427.13 24" RCP – INV 3427.13	54" RCP – INV 3424.63	3442.38
25	60" TYPE III	CROSSBRIDGE AVE	55+76.75, 12.74' R	54" RCP – INV 3425.56 24" RCP – INV 3428.06	54" RCP – INV 3425.56	3443.32
26	60" TYPE III	CROSSBRIDGE AVE	54+23.63, 0.00'	54" RCP – INV 3426.48	54" RCP – INV 3426.48	3444.50
27	60" TYPE III	CROSSBRIDGE AVE	51+74.63, 0.00'	54" RCP – INV 3427.97	54" RCP – INV 3427.97	3445.65
28	60" TYPE III	CROSSBRIDGE AVE	49+38.00, 0.00'	54" RCP – INV 3429.39 24" RCP – INV 3431.89 24" RCP – INV 3431.89	54" RCP – INV 3429.39	3444.27
29	60" TYPE III	CROSSBRIDGE AVE	48+46.27, 0.00'	54" RCP – INV 3429.94	54" RCP – INV 3429.94	3443.72
30	60" TYPE I	CROSSBRIDGE AVE	41+93.40, 14.00' L	24" RCP – INV 3428.34 24" RCP – INV 3428.34	24" RCP – INV 3428.34	3439.77
31	60" TYPE I	CROSSBRIDGE AVE	39+16.00, 14.00' L	24" RCP – INV 3432.63	24" RCP – INV 3432.63	3442.23
32	60" TYPE II-SD	CROSSBRIDGE AVE	34+84.07, 25.50' R	66" RCP – INV 3433.97	72" RCP – INV 3433.47	3446.06
33	60" TYPE II-SD	CROSSBRIDGE AVE	32+47.00, 23.77' R	66" RCP – INV 3435.34	66" RCP – INV 3435.34	3448.32

NOTE

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BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

STORM DRAIN QUANTITIES (PUBLIC)

24" STORM DRAIN CLASS III RCP	99 LF
24" STORM DRAIN CLASS IV RCP	266 LF
24" STORM DRAIN CLASS IV RCP (BEVELED)	247 LF
24" STORM DRAIN CLASS V RCP	90 LF
54" STORM DRAIN CLASS III RCP (BEVELED)	227 LF
54" STORM DRAIN CLASS IV RCP	730 LF
54" STORM DRAIN CLASS IV RCP (BEVELED)	827 LF
66" STORM DRAIN CLASS III RCP (BEVELED)	436 LF
72" STORM DRAIN CLASS III RCP	45 LF
60"X48" STORM DRAIN CLASS IV RCB	612 LF
TYPE I STORM DRAIN MANHOLE	2 EA
TYPE III STORM DRAIN MANHOLE	10 EA
TYPE II-SD MANHOLE	2 EA
PIPE JUNCTION	2 EA
TYPE "CM" DROP INLET (L = 5.0')	5 EA
TYPE "CM" DROP INLET (L = 7.5')	3 EA
TYPE "CM" DROP INLET (L = 10.0')	3 EA

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

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or
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CLARK COUNTY REGIONAL OPERATIONS
1-702-455-6000

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

FAST
Call before you UnderGround
1-702-432-5300
TRUCKEE MEADOWS INTERNAL SYSTEM OF TRANSPORTATION

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15787 - PROFESSIONAL - DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV.	DESCRIPTION	DATE	AGEN. APP.	DATE	GCW APP.	DATE

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-06-15
PLOT TIME: 11:05:11

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.8000 F: 702.804.2299 GCWALLACE.COM
LAS VEGAS

F:\Projects\600\62024-222\DWG\Production\24CB2C05_MU2.dwg
Lupe Greco

THE HOWARD HUGHES COMPANY, LLC

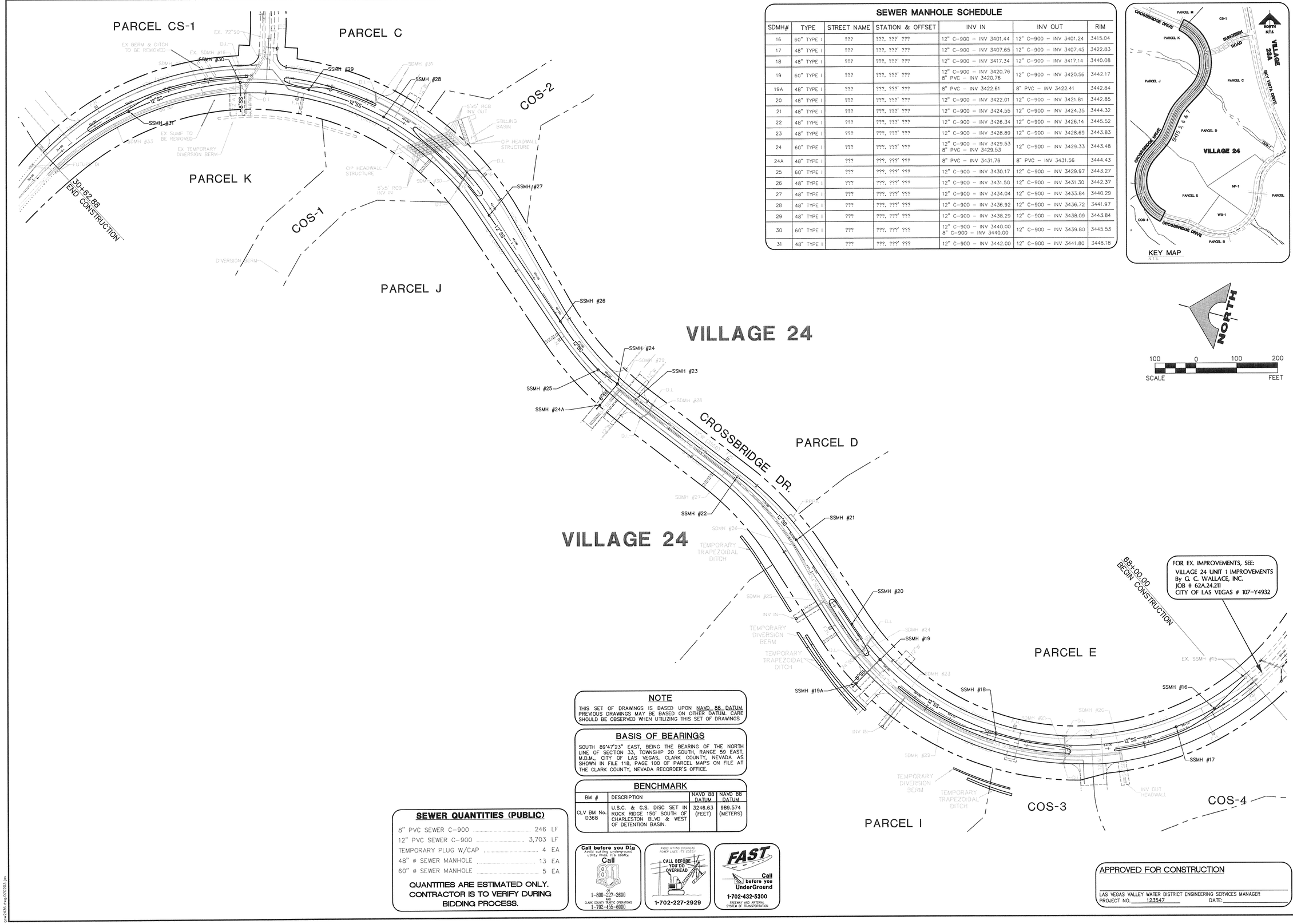
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

STORM DRAIN MASTER PLAN

DRAWING 6
6 OF 53 SHTS

SID NO. 812 PROJECT 2

ps-24.36.dwg 070203.prv



SEWER MANHOLE SCHEDULE

SDMH#	TYPE	STREET NAME	STATION & OFFSET	INV IN	INV OUT	RIM
16	60" TYPE I	???	???, ??? ???	12" C-900 – INV 3401.44	12" C-900 – INV 3401.24	3415.04
17	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3407.65	12" C-900 – INV 3407.45	3422.83
18	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3417.34	12" C-900 – INV 3417.14	3440.08
19	60" TYPE I	???	???, ??? ???	12" C-900 – INV 3420.76 8" PVC – INV 3420.76	12" C-900 – INV 3420.56	3442.17
19A	48" TYPE I	???	???, ??? ???	8" PVC – INV 3422.61	8" PVC – INV 3422.41	3442.84
20	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3422.01	12" C-900 – INV 3421.81	3442.85
21	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3424.55	12" C-900 – INV 3424.35	3444.32
22	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3426.34	12" C-900 – INV 3426.14	3445.52
23	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3428.89	12" C-900 – INV 3428.69	3443.83
24	60" TYPE I	???	???, ??? ???	12" C-900 – INV 3429.53 8" PVC – INV 3429.53	12" C-900 – INV 3429.33	3443.48
24A	48" TYPE I	???	???, ??? ???	8" PVC – INV 3431.76	8" PVC – INV 3431.56	3444.43
25	60" TYPE I	???	???, ??? ???	12" C-900 – INV 3430.17	12" C-900 – INV 3429.97	3443.27
26	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3431.50	12" C-900 – INV 3431.30	3442.37
27	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3434.04	12" C-900 – INV 3433.84	3440.29
28	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3436.92	12" C-900 – INV 3436.72	3441.97
29	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3438.29	12" C-900 – INV 3438.09	3443.84
30	60" TYPE I	???	???, ??? ???	12" C-900 – INV 3440.00 8" C-900 – INV 3440.00	12" C-900 – INV 3439.80	3445.53
31	48" TYPE I	???	???, ??? ???	12" C-900 – INV 3442.00	12" C-900 – INV 3441.80	3448.18

NOTE

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BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

SEWER QUANTITIES (PUBLIC)

8" PVC SEWER C-900	246	LF
12" PVC SEWER C-900	3,703	LF
TEMPORARY PLUG W/CAP	4	EA
48" ø SEWER MANHOLE	13	EA
60" ø SEWER MANHOLE	5	EA

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

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or
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CLARK COUNTY 811 NOTIFICATION CENTER
1-702-455-6000

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1-702-227-2929

FAST
Call before you UnderGround
1-702-432-5300
TELEWAY AND INTERNAL SYSTEM OF TRANSPORTATION

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO: 123547 DATE:

NORTH

100 0 100 200
SCALE FEET

ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15787 - PROFESSIONAL - DATE: 10/05/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN. APP	DATE	GCW APP	DATE

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-06-15
PLOT TIME: 11:06:57

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS
F:\Projects\600\62024-222\DWG\Production\24CB2d07_MU3.dwg
Lupe Greco

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS
SEWER MASTER PLAN

DRAWING 7
7 OF 53 SHTS

SID NO. 812 PROJECT 2

gc42436.dwg 070203.prv

VILLAGE 24
PARCEL E
APN 137-33-801-001

MATCHLINE 64+00 - SEE SHEET 9

DAYLIGHT LINE

EX. CALICO POWER POLE -REMOVE & MOVE OUTSIDE DAYLIGHT LINE

64+01.56 PT, 35.84' LT 3432.45 TC

64+16.54 PC, 36.00' LT 3431.77 TC

64+16.54 PRC, 3.67' RT 3432.04 TC

64+16.54 PRC, 8.33' RT 3431.94 TC

72' C-900 SS

5' PIP SD

65+00 27.70 TC 27.60 TC

65+65.73 PCC, 3.67' RT 3423.65 TC

66+00 21.34 TC

66+61.68 PRC, 4.98' LT 3416.72 TC

66+99.16 PRC, 8.33' LT 3413.64 TC

Δ=117°27'13" R=675.00' L=1383.72' T=1111.35'

72.00' R/W

12" DIP W

6" PVC W

67+00 EVC

12.00' CALICO POWER ESMT

10.00' CALICO POWER ESMT

24.00' LS

FUT R

BC

FOR DETAILED GRADING INFORMATION SEE SHEET 16

COS-4

EX. CALICO POWER POLE -REMOVE & MOVE OUTSIDE DAYLIGHT LINE

DAYLIGHT LINE

68+00.00 BEGIN CONSTRUCTION

COMMON LOT

FUTURE SIDEWALK BY OTHERS

VILLAGE 24
EXISTING UNIT 1

EX. 12" C-900 SS

EX. 16" DIP W

EX. 24" RCP SD

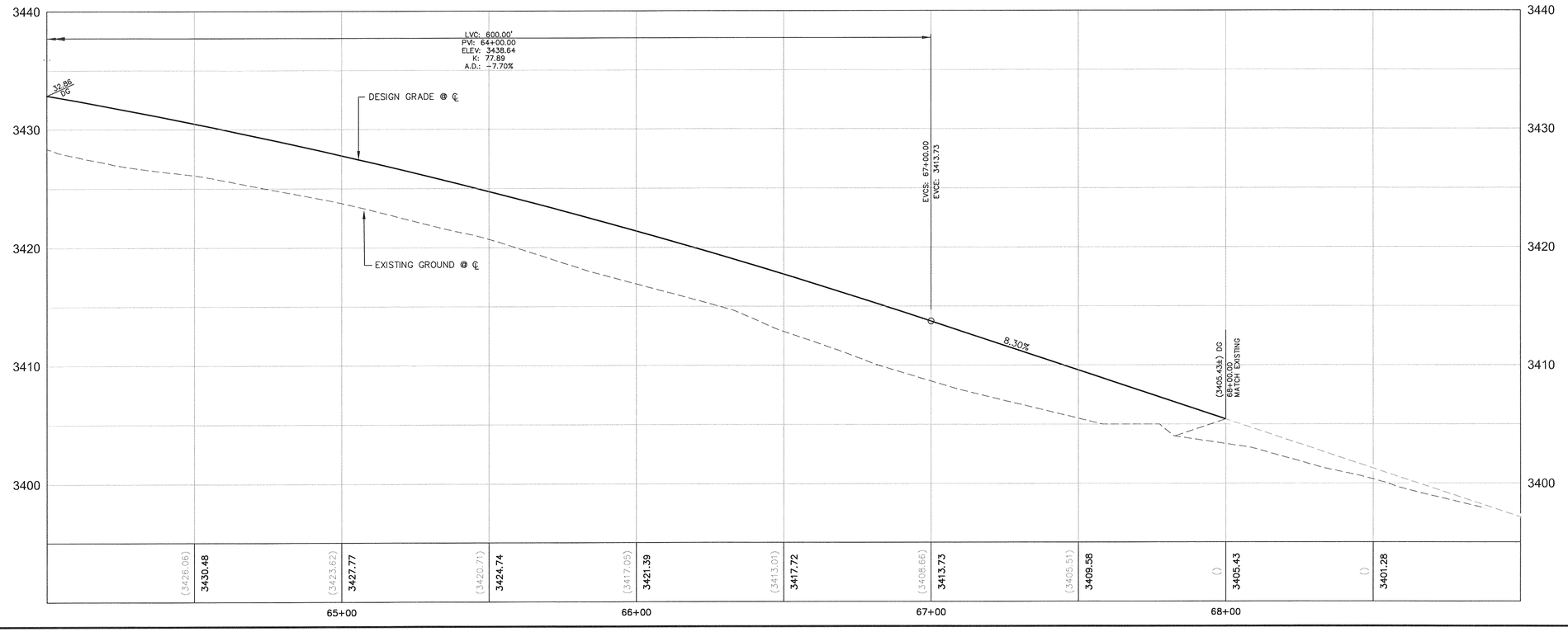
68+00

69+

VILLAGE 24
PARCEL B
APN 164-03-111-002

CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'



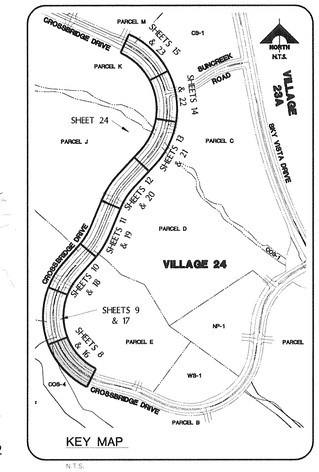
DRAINAGE CERTIFICATION

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

JOSHUA L. JOHNSON P.E. 15789 DATE

NORTH

SCALE 20 0 20 40 FEET



NOTE

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BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63	989.574

FAST
Call before you UnderGround
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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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Avoid cutting underground utility lines. It's costly.
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or
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CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

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1-702-227-2929

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15789
PROFESSIONAL
CIVIL
exp. 06/30/2017
DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 11:05:08

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
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LAS VEGAS

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Paul Brennerd

THE HOWARD HUGHES COMPANY, LLC

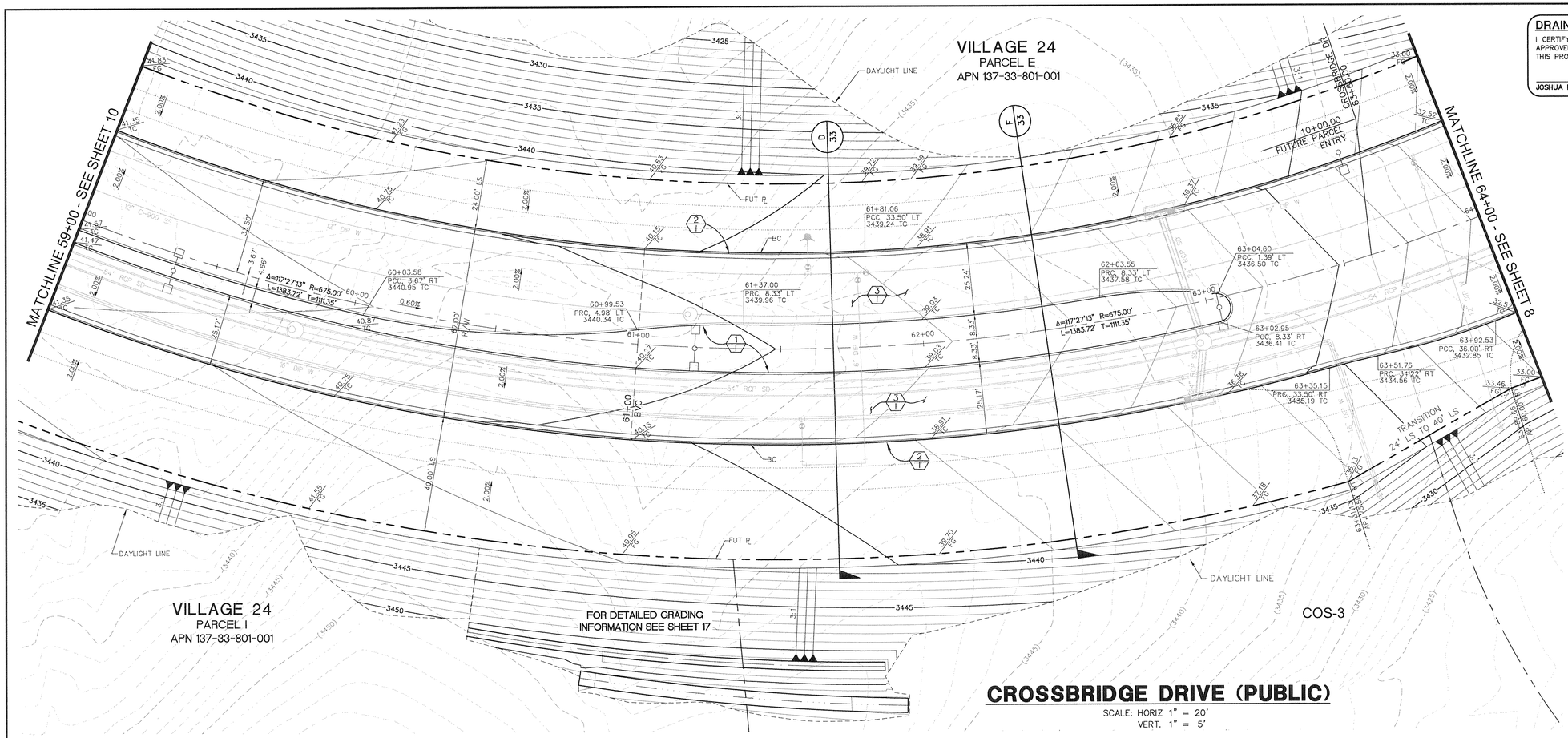
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
ROADWAY PLAN AND PROFILE 1

DRAWING 8
8 OF 53 SHTS

SID NO. 812 PROJECT 2

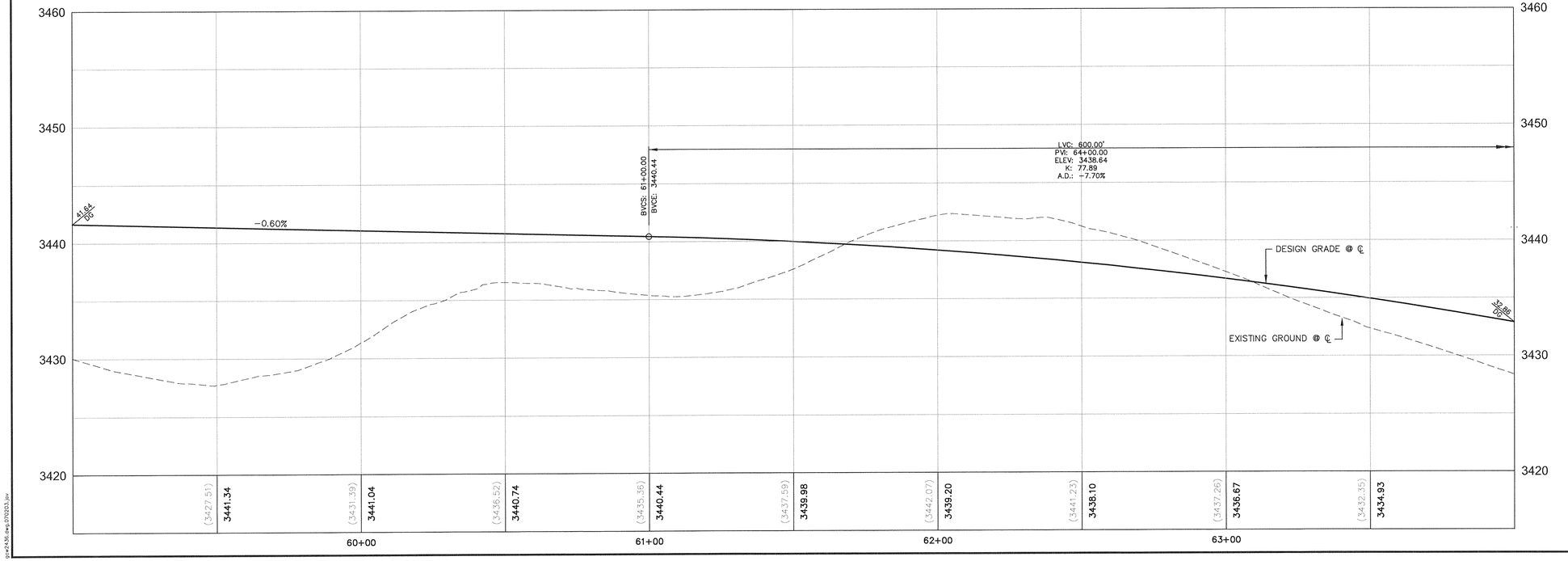
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DRAINAGE CERTIFICATION

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

JOSHUA L. JOHNSON P.E. 15789 DATE



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ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15789 - PROFESSIONAL - CIVIL - EXP. 06/30/2017

DATE 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 11:07:34

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV. 89146
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LAS VEGAS
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Paul Brennord

THE HOWARD HUGHES COMPANY, LLC

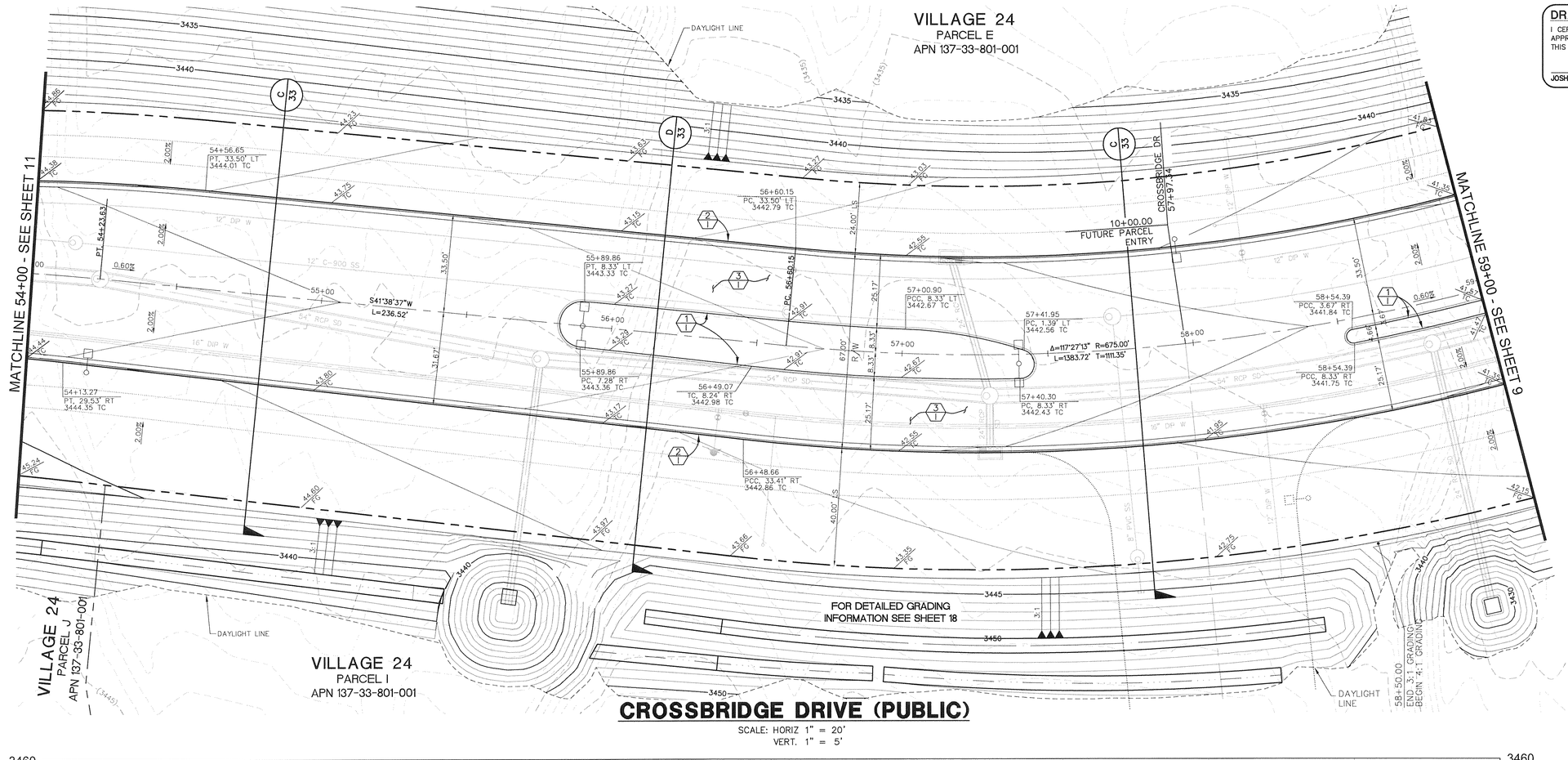
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
ROADWAY PLAN AND PROFILE 2

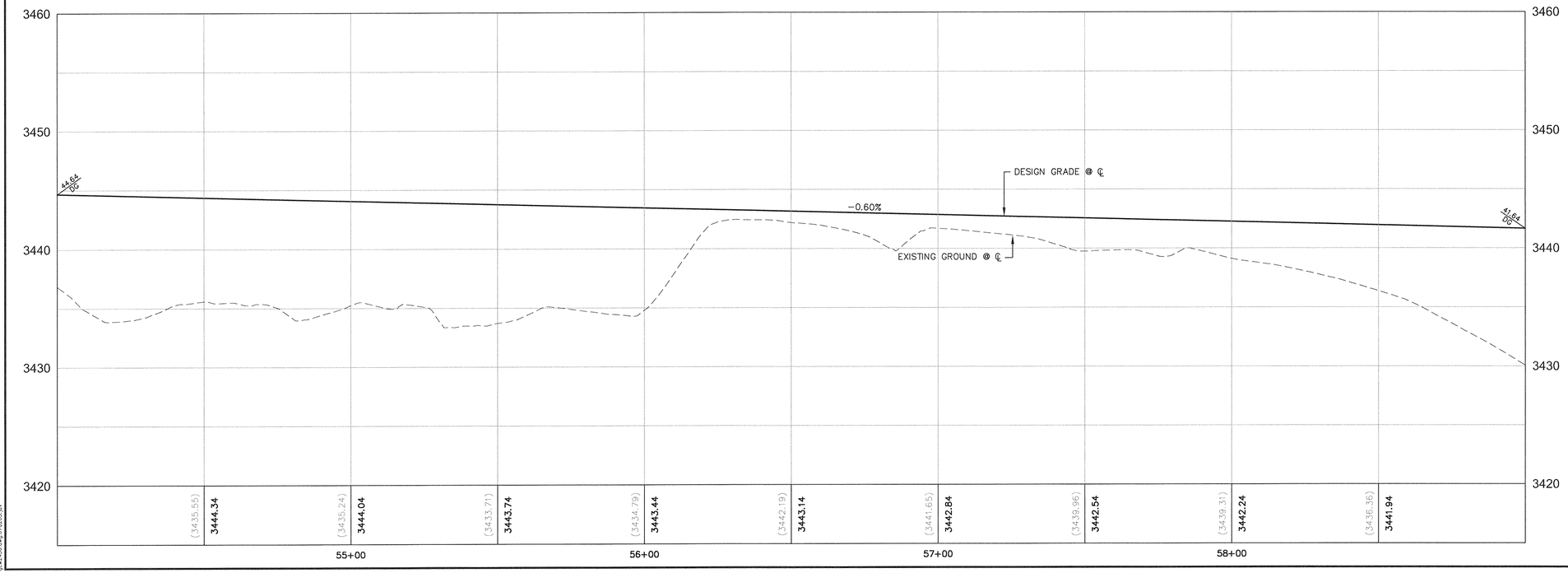
DRAWING 9
9 OF 53 SHTS

SID NO. 812 PROJECT 2

pw2436.dwg 8/7/2015 jpr



SCALE: HORIZ 1" = 20'
VERT. 1" = 5'



DRAINAGE CERTIFICATION

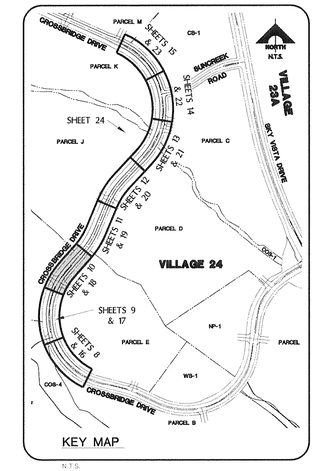
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JOSHUA L. JOHNSON P.E. 15789 DATE

ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15789 - PROFESSIONAL - DATE: 10/01/2015

NORTH

20 0 20 40
SCALE FEET



KEY MAP

N.T.S.

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

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

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REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP
		TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION				

PROJECT NO. 62024-222
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DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 11:09:57

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS
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Paul Brennard

THE HOWARD HUGHES COMPANY, LLC

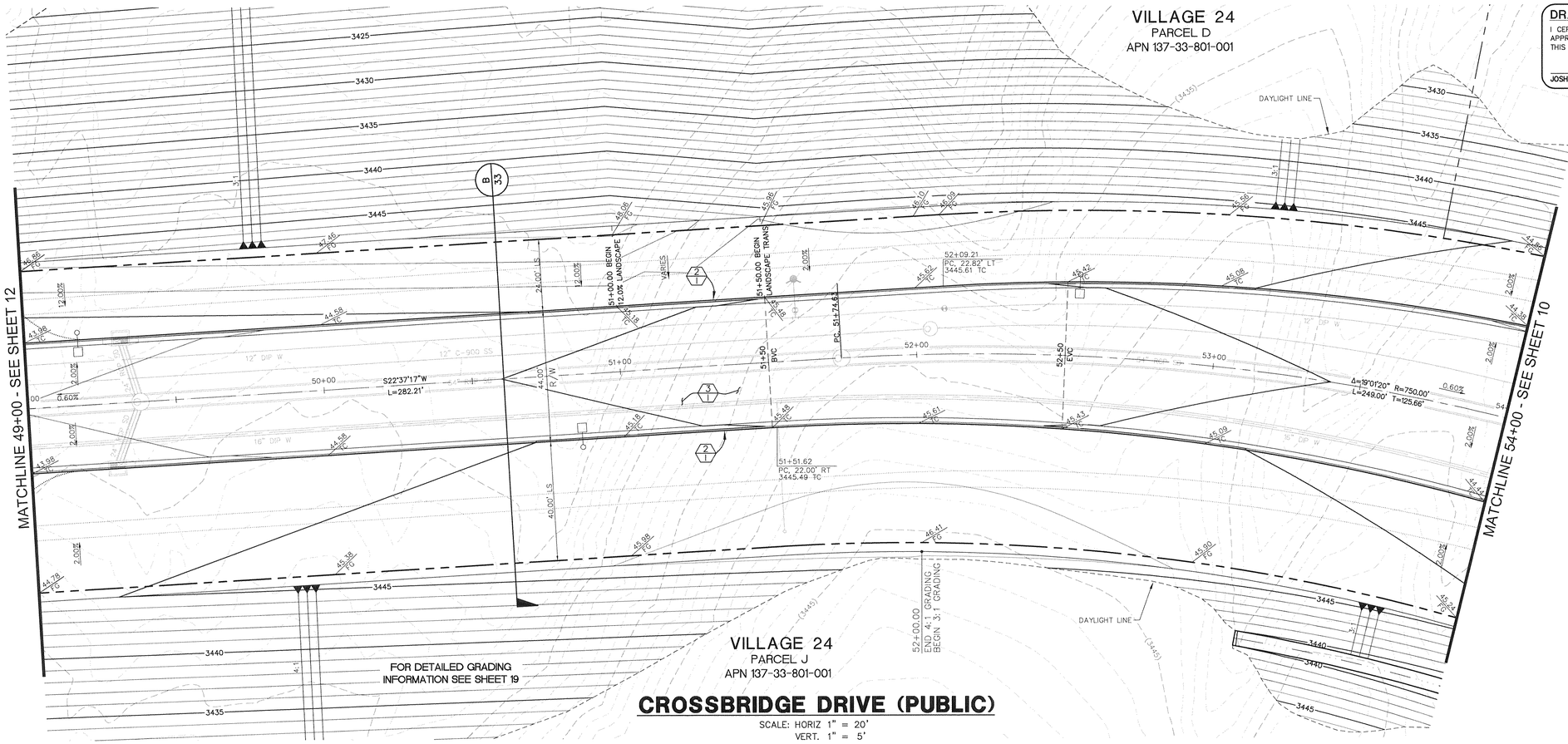
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

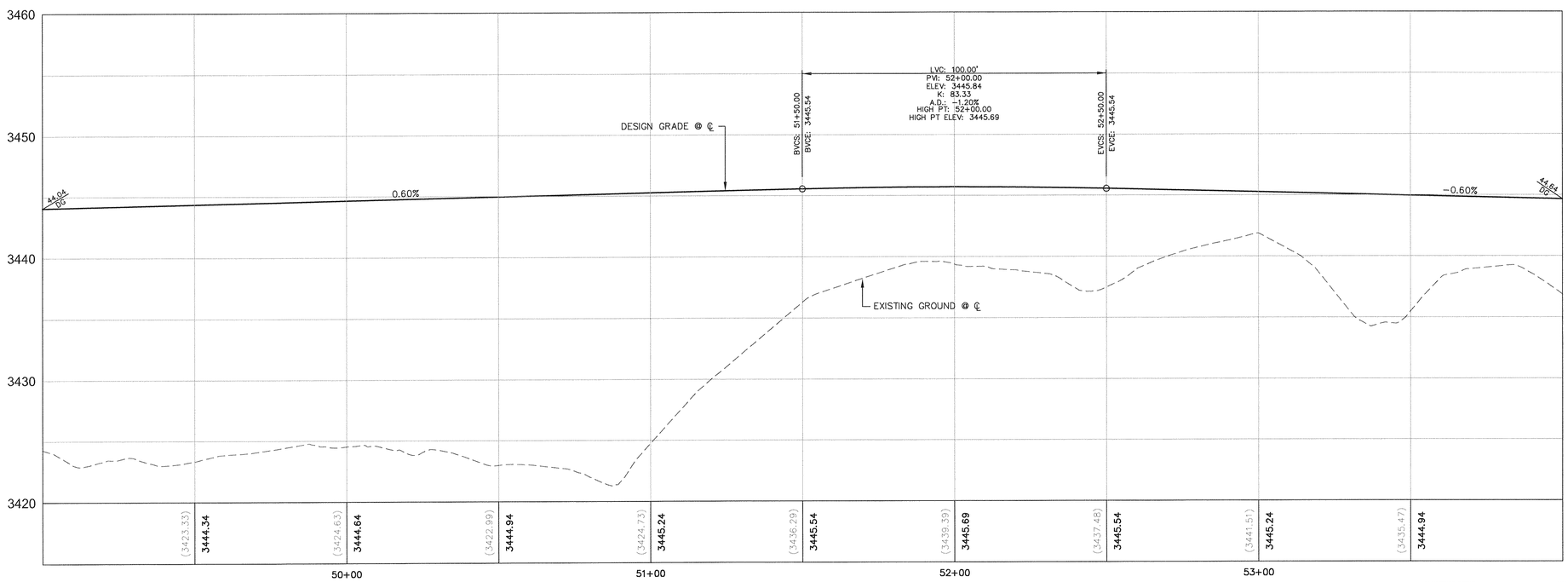
CROSSBRIDGE DRIVE
ROADWAY PLAN AND PROFILE 3

DRAWING 10
10 OF 53 SHTS

SID NO. 812 PROJECT 2

cm24.lib dwg 07/2013.pc





DRAINAGE CERTIFICATION

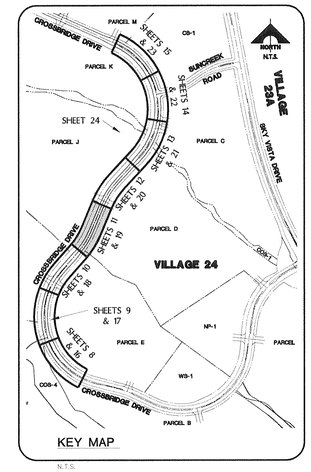
I CERTIFY THAT THE GRADING PLANS ARE IN CONFORMANCE WITH THE APPROVED DRAINAGE STUDY ON FILE AT THE CITY OF LAS VEGAS FOR THIS PROJECT.

JOSHUA L. JOHNSON P.E. 15789 DATE

ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15789 - PROFESSIONAL - DATE: 10/01/2015

NORTH

20 0 20 40
SCALE FEET



KEY MAP
N.T.S.

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

Call before you Dig
Avoid cutting underground utility lines, it's costly.
Call
or
1-800-227-2600
AND
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

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

NOTE

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BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 11:12:22

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS
F:\Projects\62024-222\DWG\Production\24CB2st1_P24.dwg
Paul Brennard

THE HOWARD HUGHES COMPANY, LLC

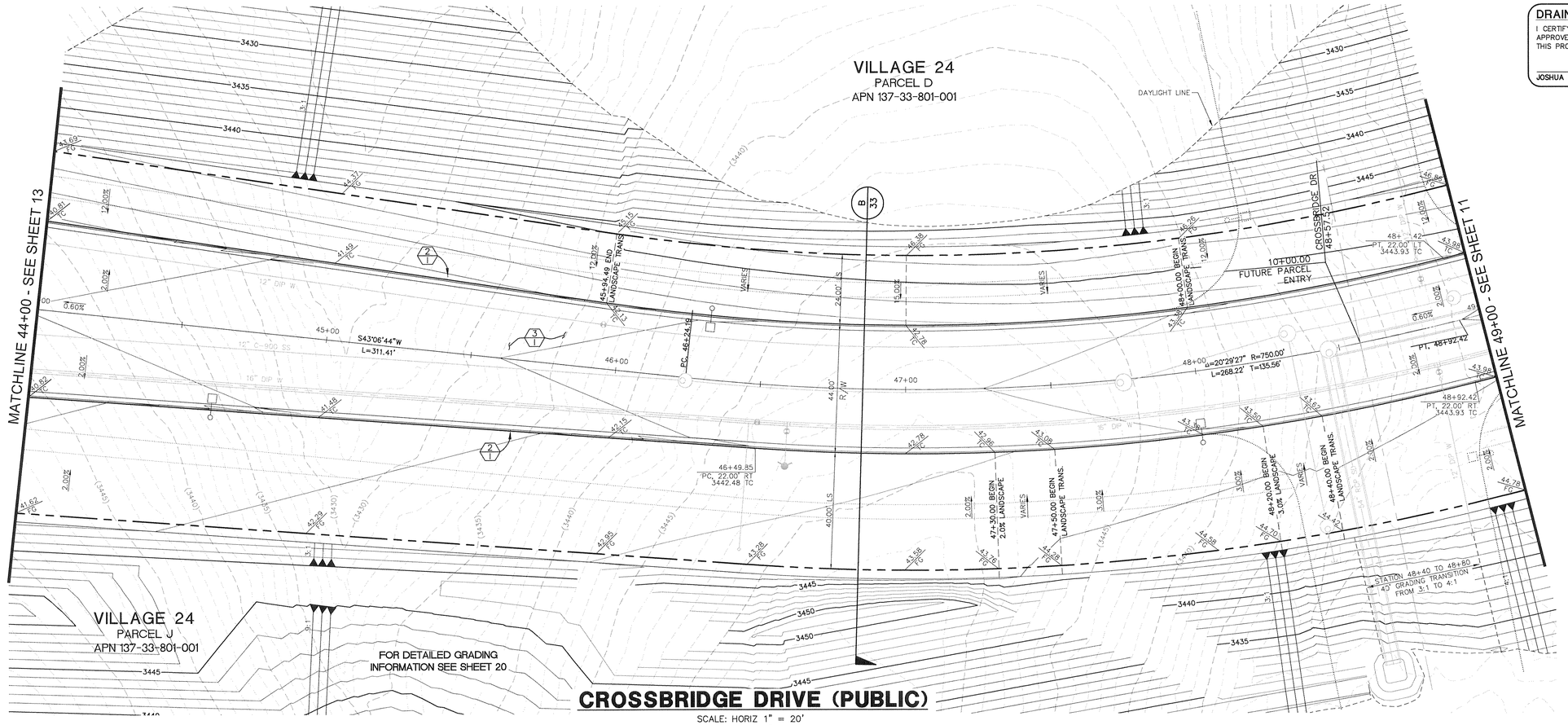
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

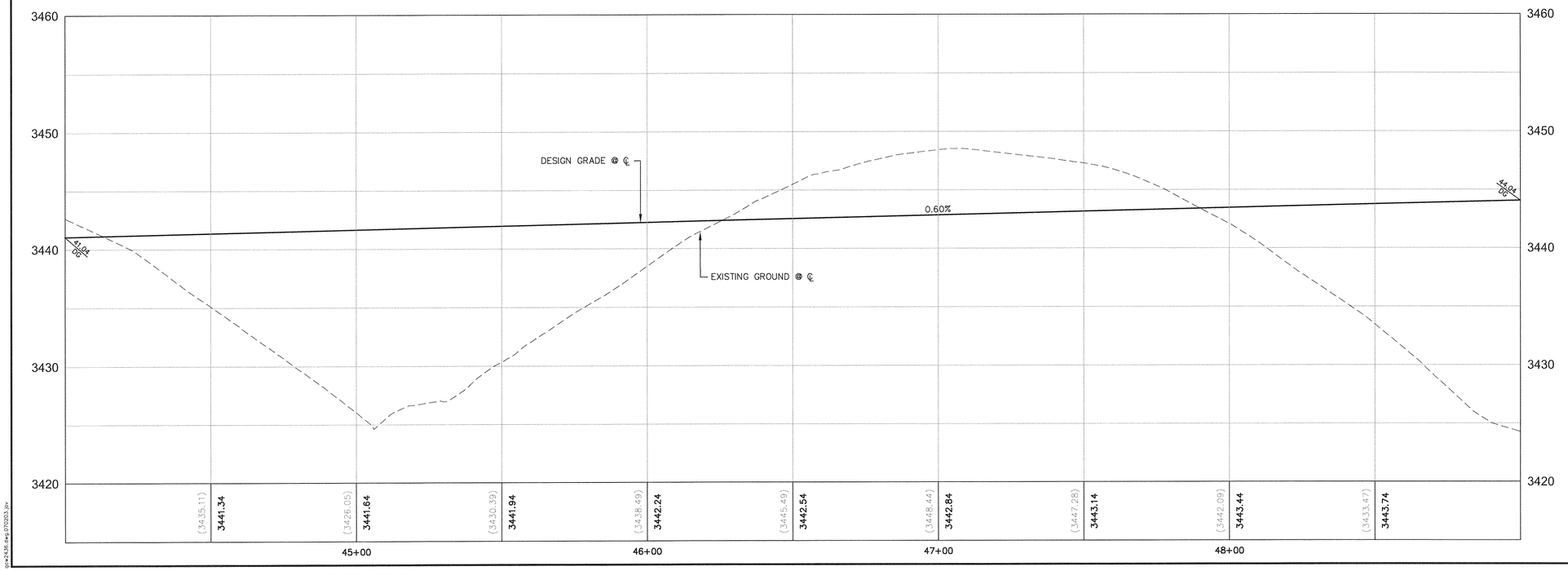
CROSSBRIDGE DRIVE
ROADWAY PLAN AND PROFILE 4

DRAWING 11
11 OF 53 SHTS

SID NO. 812 PROJECT 2

dw24136.dwg 070203.pv





DRAINAGE CERTIFICATION

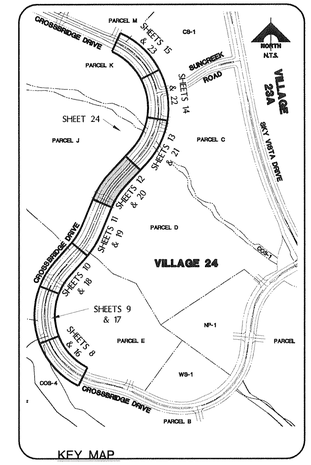
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JOSHUA L. JOHNSON P.E. 15789 DATE

STATE OF NEVADA — ENGINEER — JOSHUA L. JOHNSON — No. 15789 — PROFESSIONAL — CIVIL — EXP. 09/30/2017 — DATE 10/01/2015

HILTON

SCALE 20 0 20 40 FEET



NOTE

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BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

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

Call before you Dig — Avoid cutting underground utility lines, it's costly. Call 811 or 1-800-227-2600 AND CLARK COUNTY TRAFFIC OPERATIONS 1-702-455-6000

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

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 11:14:45

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS

F:\Projects\62024-222\DWG\Production\24CB2d12_PP5.dwg
Paul Bremmard

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
ROADWAY PLAN AND PROFILE 5

DRAWING 12
12 OF 53 SHTS

SID NO. 812 PROJECT 2

ce24.36.dwg 070203.dw

VILLAGE 24
PARCEL C
APN 137-33-801-001

VILLAGE 24
PARCEL D
APN 137-33-801-001

VILLAGE 24
PARCEL J
APN 137-33-801-001

COS-1

COS-2

DAYLIGHT LINE

PUBLIC DRAINAGE EASEMENT TO BE PUBLICLY MAINTAINED

PUBLIC ACCESS EASEMENT (PRIVATELY MAINTAINED)

FOR DRAINAGE CORRIDOR GRADING PLAN SEE SHEET 24

FOR DETAILED GRADING INFORMATION SEE SHEET 21

CROSSBRIDGE DR 36+47.50

10+00.00 FUTURE PARCEL ENTRY

1 / 48 CIP HEADWALL STRUCTURE

MATCHLINE 39+00 - SEE SHEET 14

MATCHLINE 44+00 - SEE SHEET 12

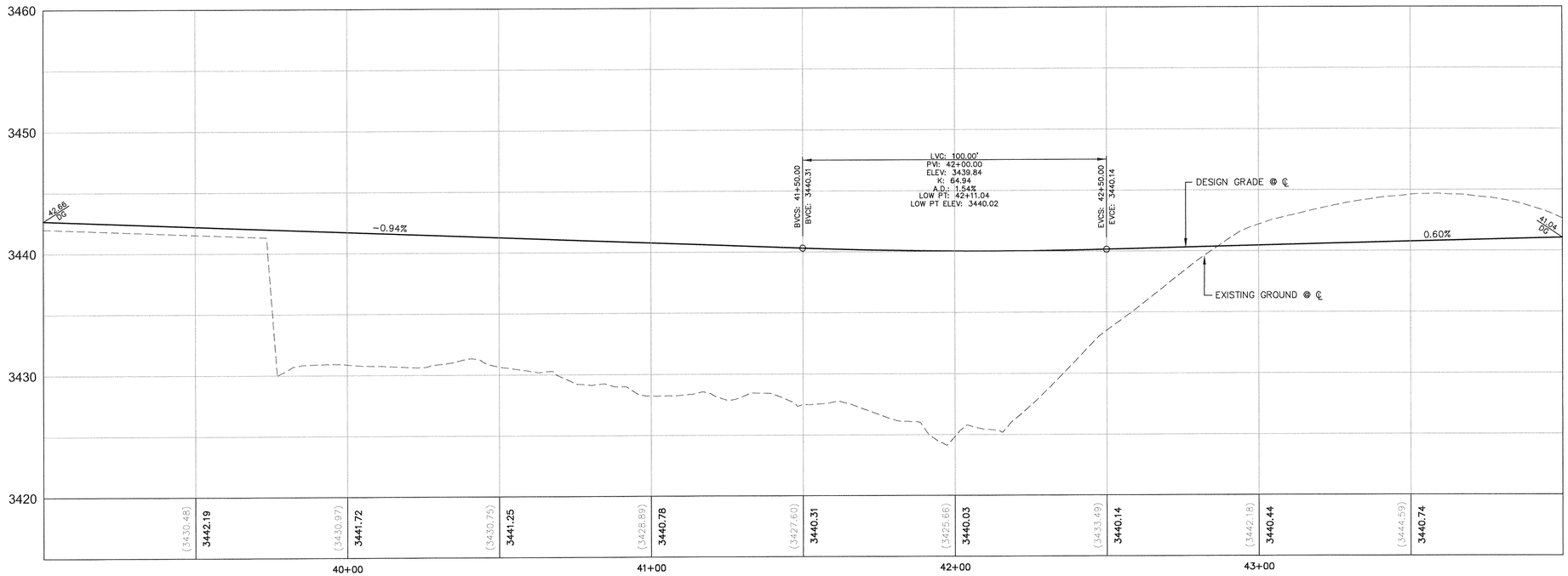
42+26.00 BEGIN LANDSCAPE 2.0%

42+43.00 BEGIN LANDSCAPE TRANS.

42+11.04 LOW POINT

CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'



DRAINAGE CERTIFICATION

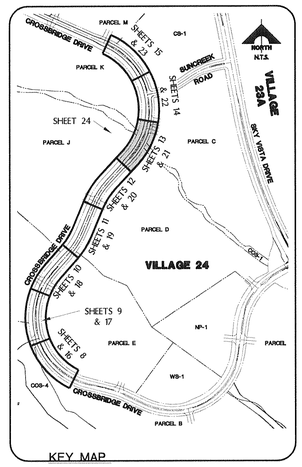
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JOSHUA L. JOHNSON P.E. 15789 DATE

ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15789 - PROFESSIONAL - 06/06/2015

NORTH

20 0 20 40
SCALE FEET



KEY MAP

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
or
1-800-227-2600
AND
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

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1-702-227-2929

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BENCHMARK

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REV	DATE	DESCRIPTION
		TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 09:45:14

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS
F:\Projects\600\62024-222\DWG\Production\24282ct13_PP6.dwg
Lupe Gracia

THE HOWARD HUGHES COMPANY, LLC

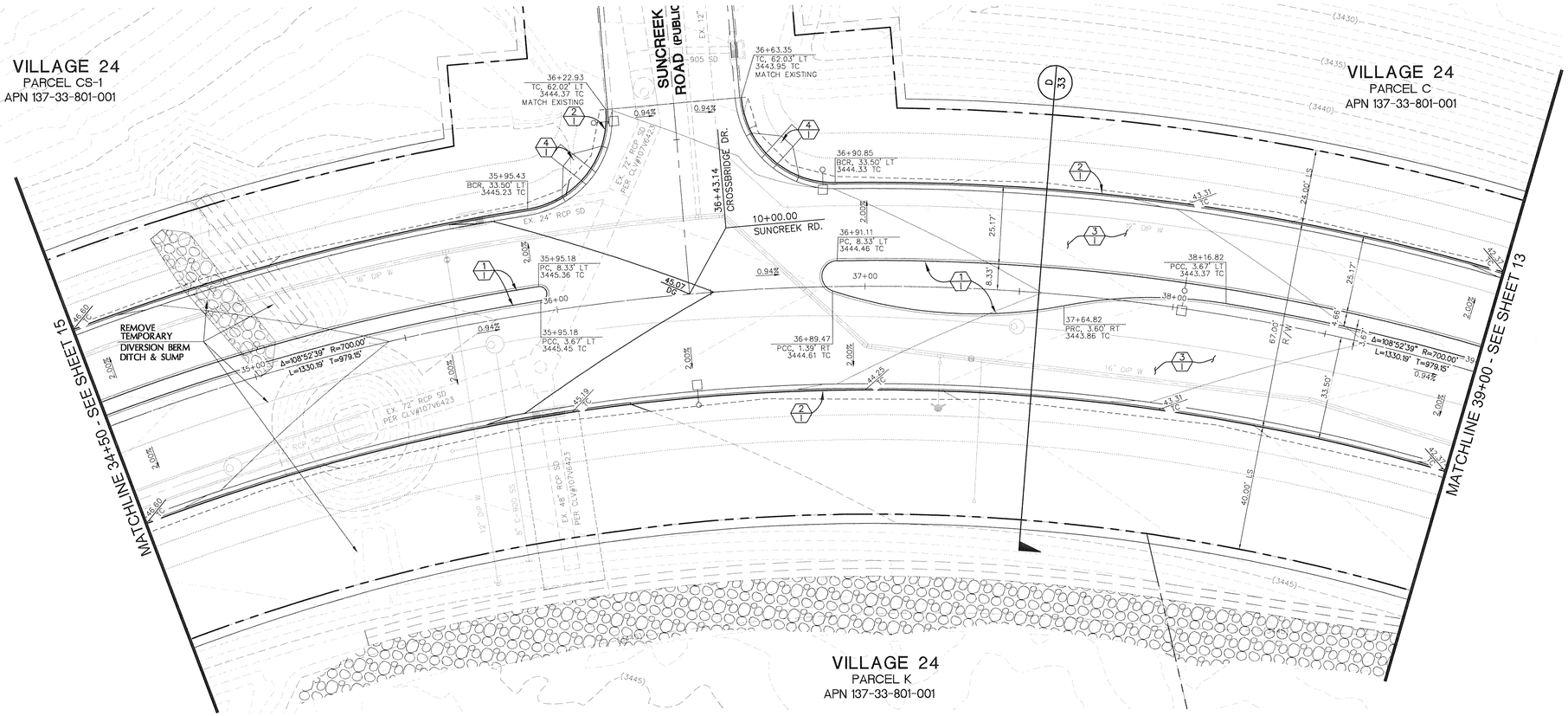
VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
ROADWAY PLAN AND PROFILE 6

DRAWING 13
13 OF 53 SHTS

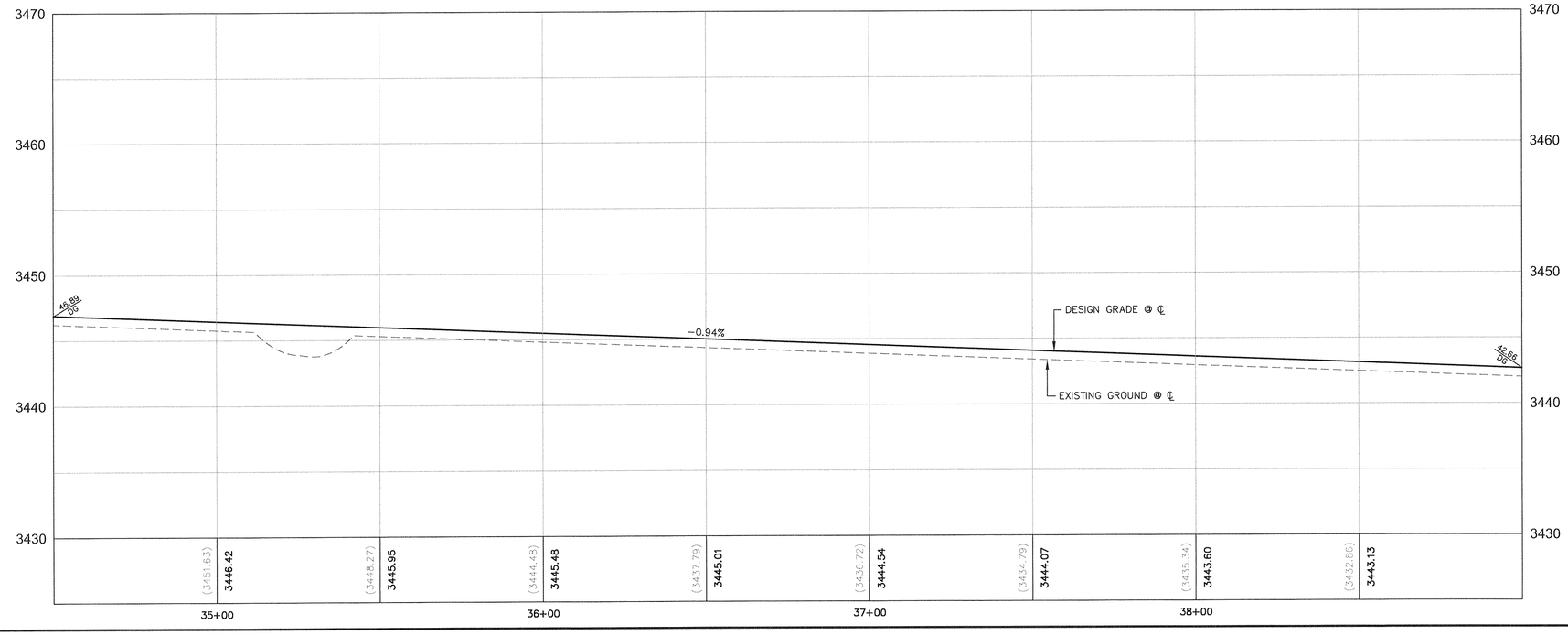
SID NO. 812 PROJECT 2

gcw24282.dwg 07/2013.jpv



CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'



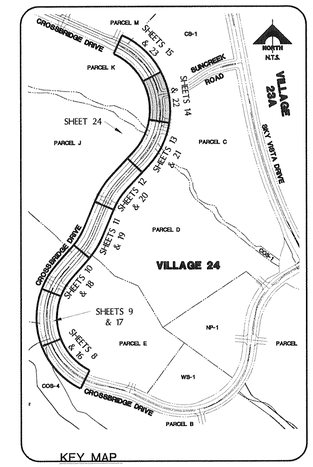
DRAINAGE CERTIFICATION

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

JOSHUA L. JOHNSON P.E. 15789 DATE

NORTH

20 0 20 40
SCALE FEET



KEY MAP

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

Call before you Dig
Avoid cutting underground utility lines, it's costly.
Call
or
1-800-227-2600
INC.
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

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1-702-227-2929

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BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM (FEET)	NAVD 88 DATUM (METERS)
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63	989.574

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15789
CIVIL
Exp. 06/30/2017
PROFESSIONAL ENGINEER

DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 11:19:30

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS

F:\Projects\620\62024-222\DWG\Production\24CB2d14_PP7.dwg
Paul Bremard

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
ROADWAY PLAN AND PROFILE 7

SID NO. 812 PROJECT 2

DRAWING
14
14 OF 53 SHTS

zsx2435-fwg-070203.jpr

VILLAGE 24
PARCEL M
APN 137-33-801-001

VILLAGE 24
PARCEL CS-1
APN 137-33-801-001

VILLAGE 24
PARCEL K
APN 137-33-801-001

REMOVE TEMPORARY DIVERSION BERM

PER CLV#: 107V6423
EX. RIPRAP
D50=8"
THICKNESS=16"

RIPRAP
D50=8"
THICKNESS=16"
HEIGHT=5'

DAYLIGHT LINE

30+63.68
END CONSTRUCTION

31+50
EVC

0.94%

2.00%

MATCHLINE 34+50 - SEE SHEET 14

FOR DETAILED GRADING

DRAINAGE CERTIFICATION

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

JOSHUA L. JOHNSON P.E. 15789 DATE

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15789
PROFESSIONAL
CIVIL
exp. 06/30/2017
DATE: 10/01/2015

NORTH

SCALE 20 0 20 40 FEET

KEY MAP

CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

LVC: 300.00'
PVI: 30+00.00
ELEV: 3451.12
K: 49.50
A.D.: 6.06%

3451.27 DG
30+63.68
END PAVEMENT

EVCS: 31+50.00
EVCE: 3449.71

DESIGN GRADE @ ℄

EXISTING GROUND @ ℄

-0.94%

45.88 DG

2:1

RIPRAP
D_{50}=8"
T=16"

DESIGN GRADE
@ CL OF SD

(3458.20)	3453.39	(3451.72)	3451.66	(3448.90)	3450.43	(3450.57)	3449.71	(3450.12)	3449.24	(3449.14)	3448.77
(3449.31)	3448.30	(3450.78)	3447.83	(3452.38)	3447.36						

30+00 31+00 32+00 33+00 34+00

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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
or
1-800-227-2600
NO CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
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1-702-227-2929

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BENCHMARK

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REV	DATE	DESCRIPTION
		TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 11:21:58

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS
F:\Projects\600\62024-222\DWG\Production\24c82c15_PP8.dwg
Paul Brennord

THE HOWARD HUGHES COMPANY, LLC

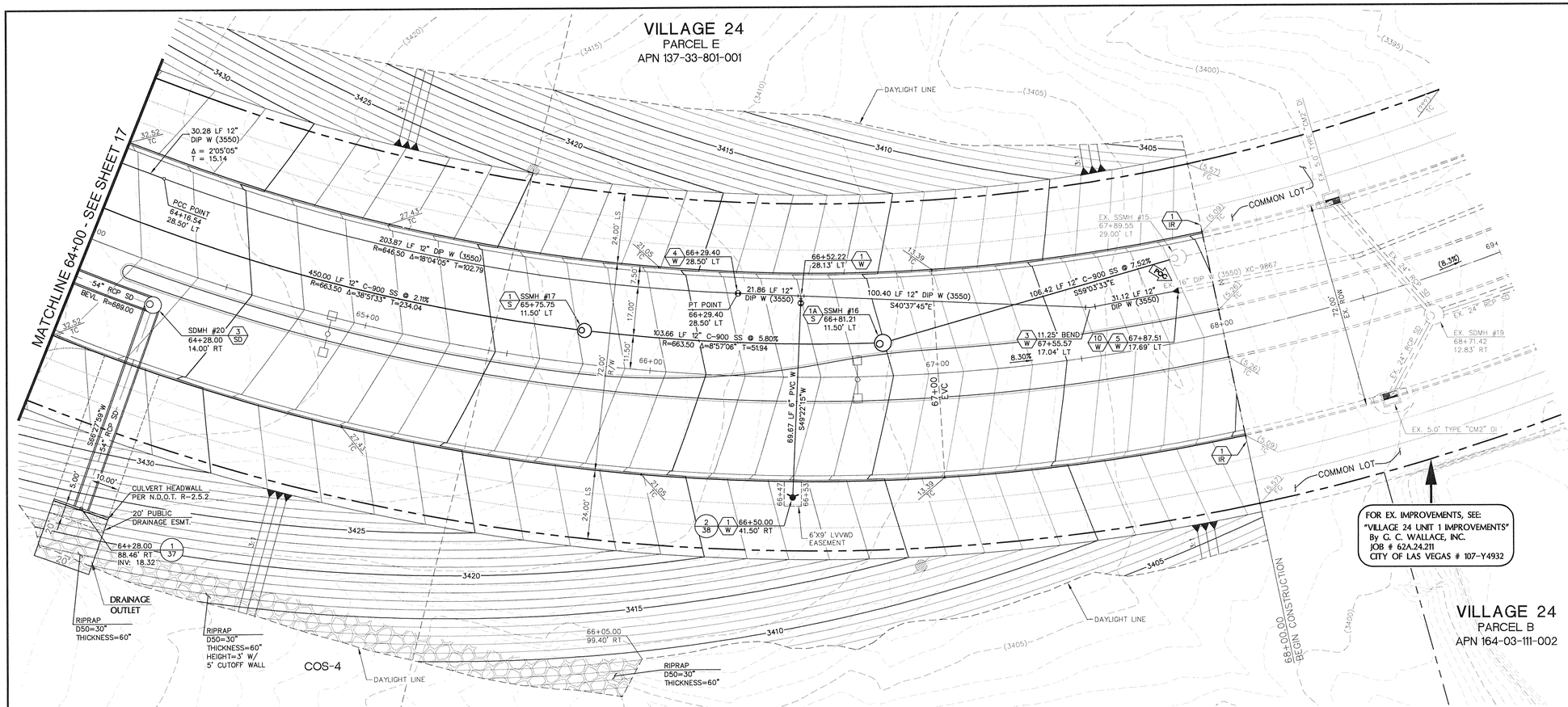
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
ROADWAY PLAN AND PROFILE 8

DRAWING 15
15 OF 53 SHTS

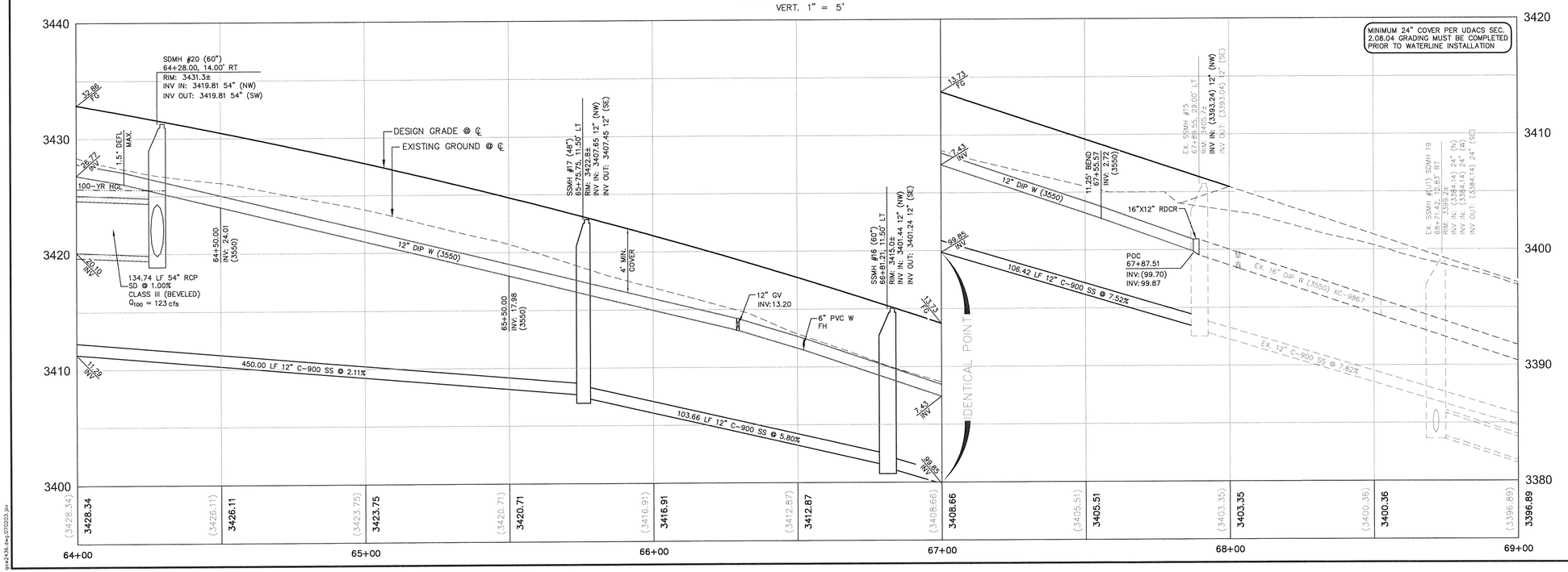
SID NO. 812 PROJECT 2

gc24.36.dwg 070203.pw



CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'



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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call
811
or
1-800-227-2600
for
CLARK COUNTY WATER OPERATIONS
1-702-455-6000

AVOID HITTING OVERHEAD POWER LINES ITS COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

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BENCHMARK

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA
JOSHUA J. JOHNSON
No. 15708
PROFESSIONAL
CIVIL
DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 11:27:03

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM
LAS VEGAS

F:\Projects\600\62024-222\GWC\Production\24CB2c16_JJT1.dwg
Paul Bernard

THE HOWARD HUGHES COMPANY, LLC

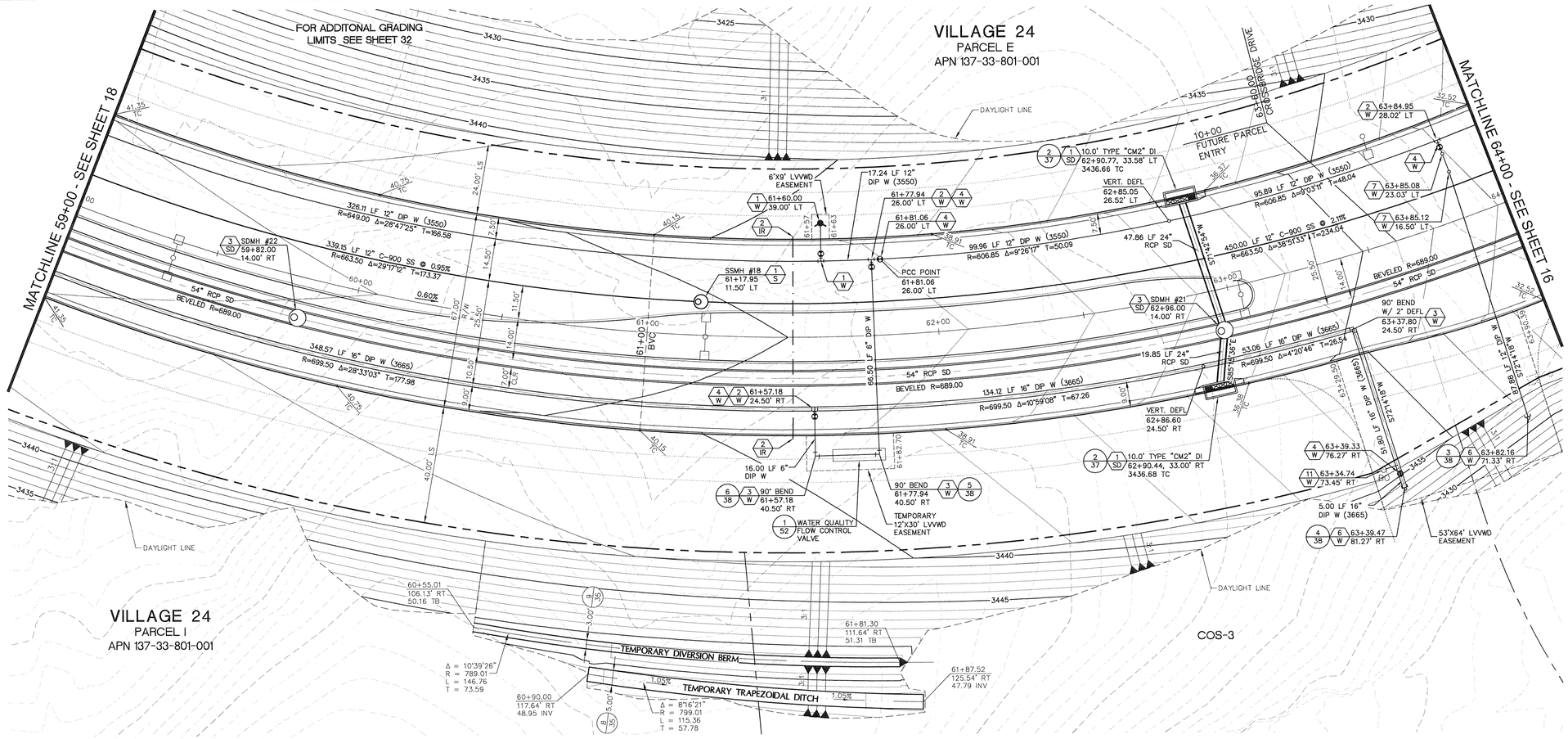
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
UTILITY PLAN AND PROFILE 1

DRAWING 16
16 OF 53 SHTS

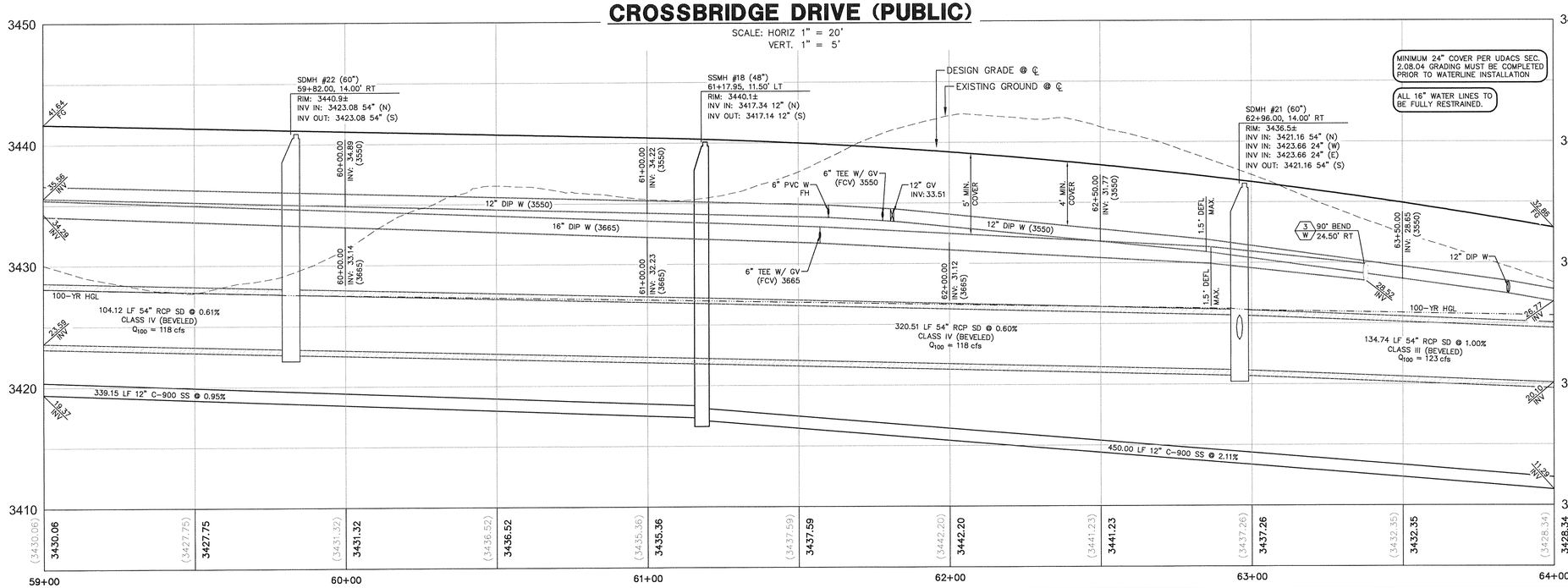
SID NO. 812 PROJECT 2

gcw24cb2c16_jjt1_071203.jpg



CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'



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CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

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

Call before you Dig Avoid cutting underground utility lines. It's costly. Call 811 1-800-227-2800 OR CLARK COUNTY TRAFFIC OPERATIONS 1-702-455-6000

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

ENGINEER - STATE OF NEVADA JOSHUA L. JOHNSON No. 15789 PROFESSIONAL Exp. 06/30/2017 Civil DATE: 10/01/2015

REV	DATE	DESCRIPTION
		TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 11:32:11

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM
LAS VEGAS

F:\Projects\600\62024-222\DWG\Production\24C52d17_UT2.dwg
Paul Brenard

THE HOWARD HUGHES COMPANY, LLC

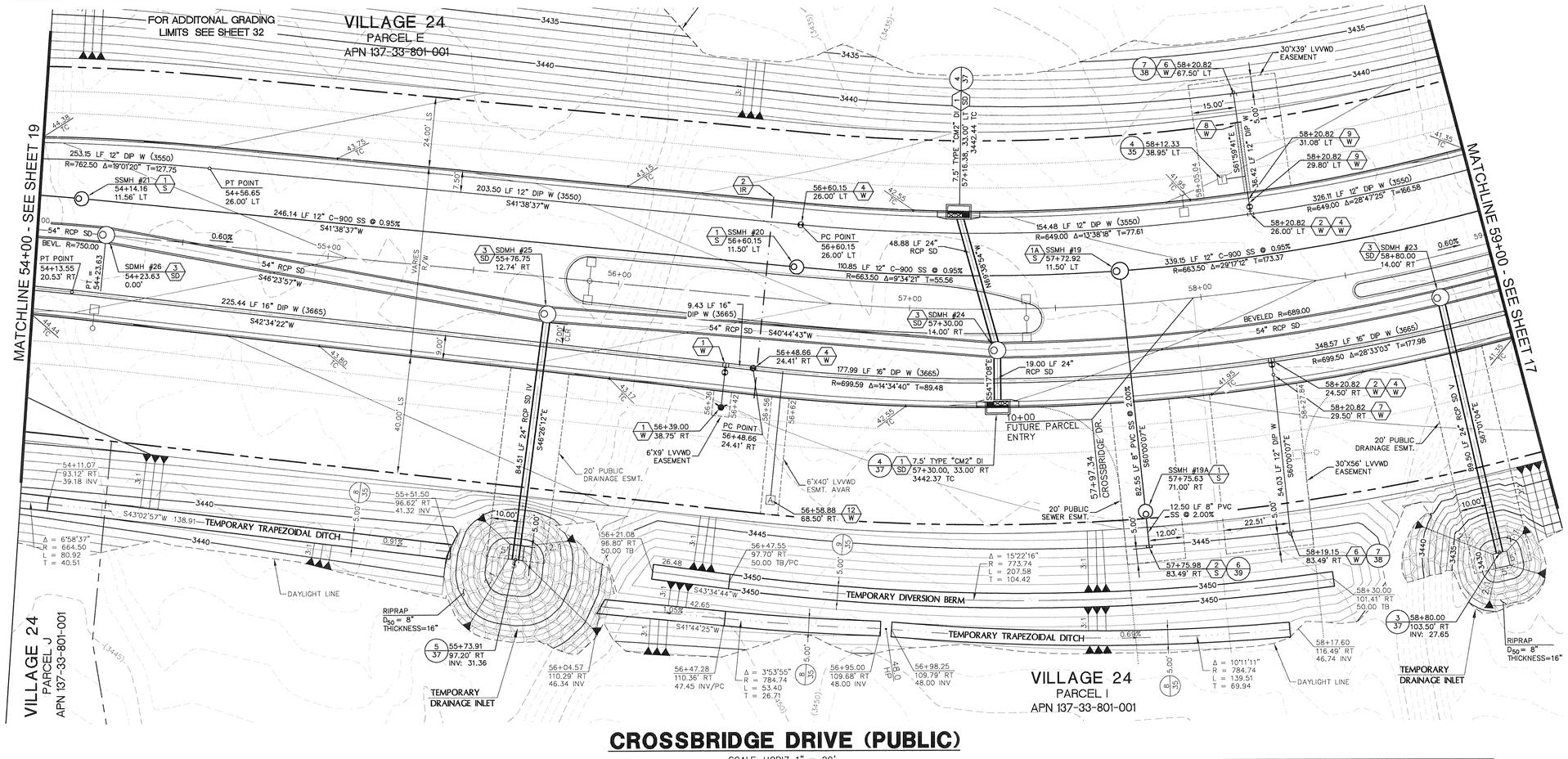
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
UTILITY PLAN AND PROFILE 2

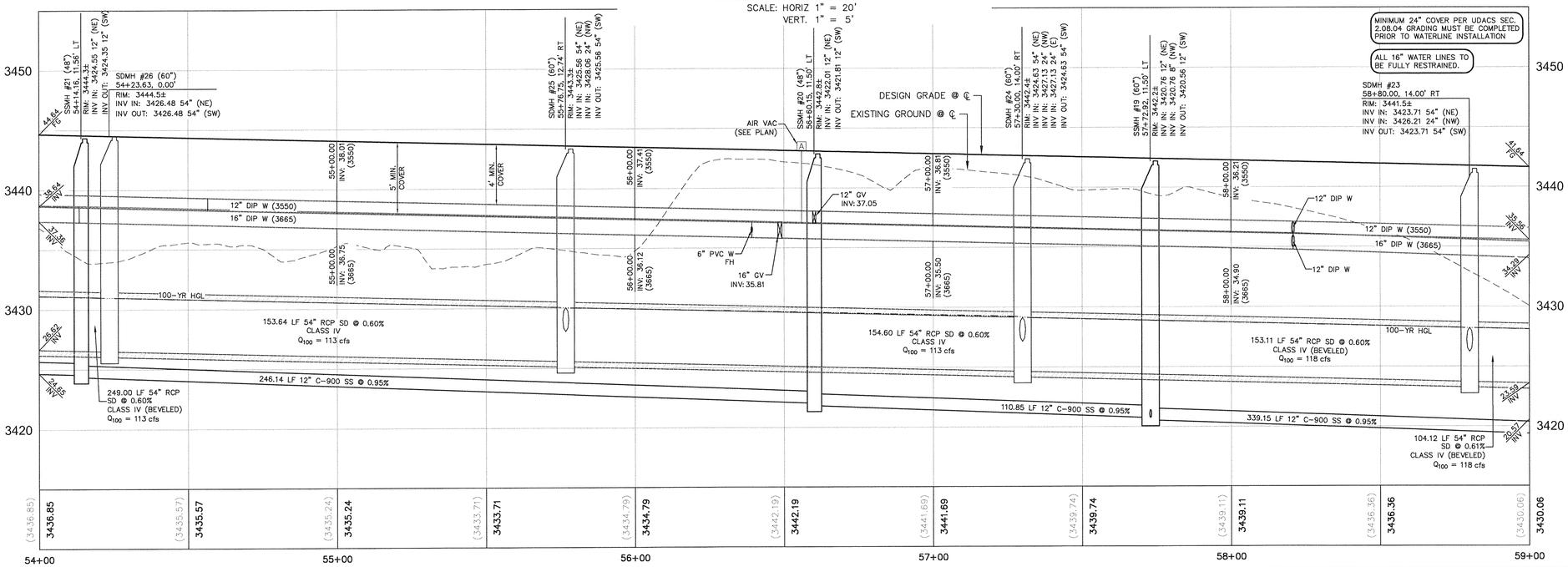
DRAWING 17
17 OF 53 SHTS

SID NO. 812 PROJECT 2

24C52d17_dwg 10/7/2015 jm



CROSSBRIDGE DRIVE (PUBLIC)



NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS

BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

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

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

ENGINEER - STATE OF NEVADA JOSHUA L. JOHNSON No. 15789 PROFESSIONAL CIVIL

DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 11:37:13

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM
LAS VEGAS
F:\Projects\600\62024-222\VWD\Production\24CB2a18_JJ13.dwg
Paul Brennand

THE HOWARD HUGHES COMPANY, LLC

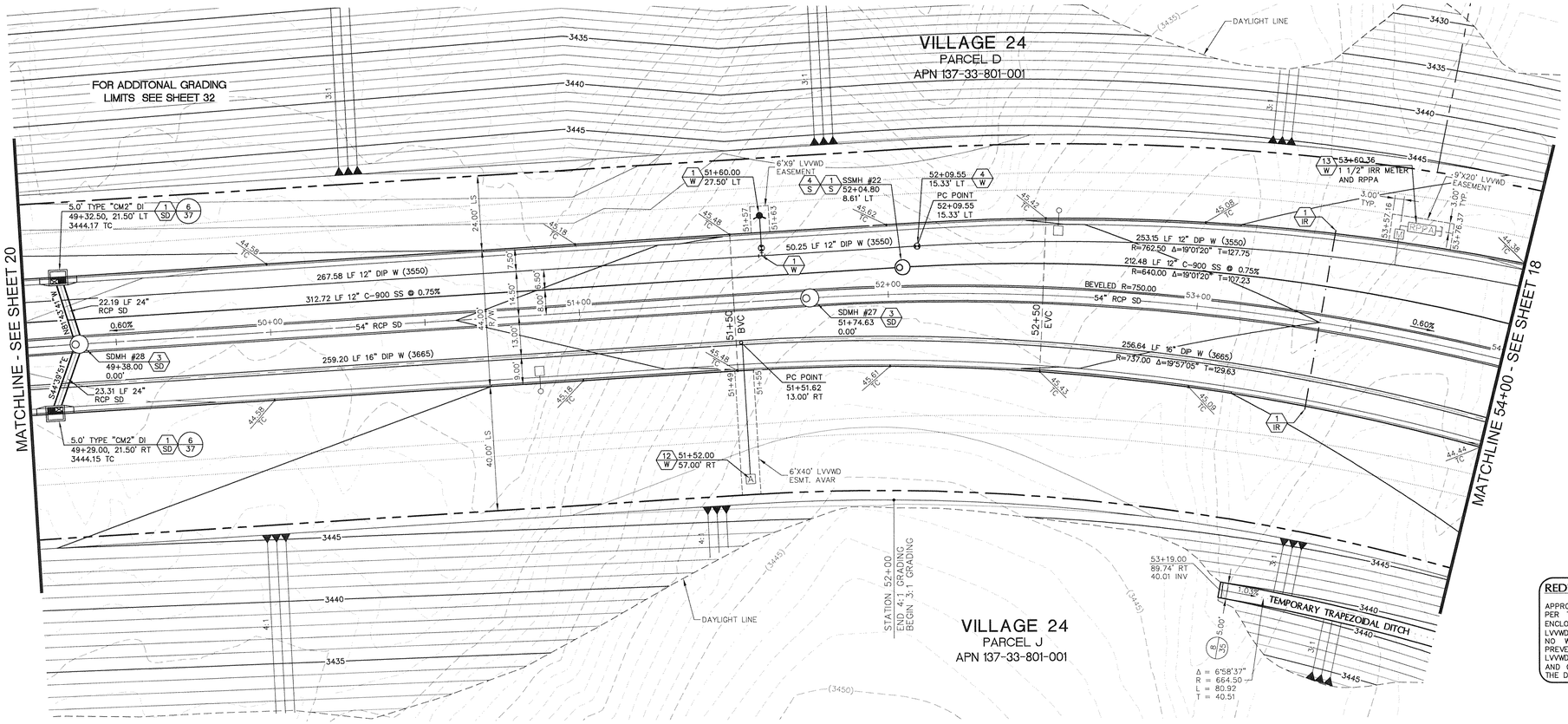
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

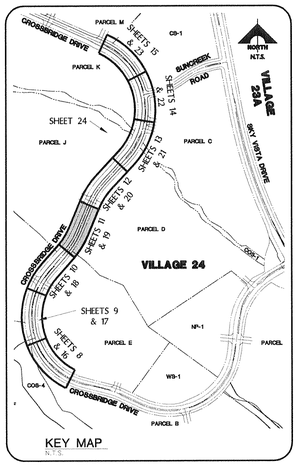
CROSSBRIDGE DRIVE
UTILITY PLAN AND PROFILE 3

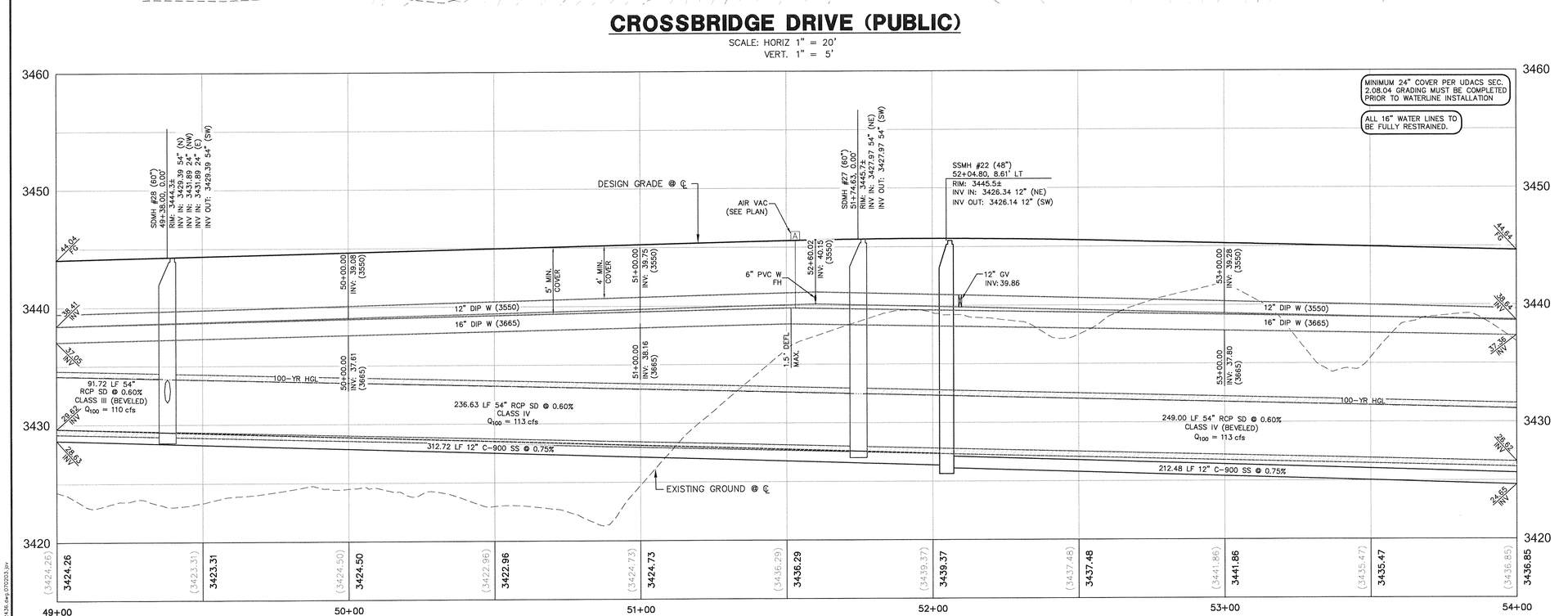
DRAWING 18
18 OF 53 SHTS

SID NO. 812 PROJECT 2

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REDUCED PRESSURE PRINCIPLE ASSEMBLY, (1) 1-1/2"

APPROVED REDUCED PRESSURE PRINCIPLE ASSEMBLY(S) SHALL BE INSTALLED PER THE UDACS PLATE NO. 8. PRE FINISHED HYDRO COWL BACK FLOW ENCLOSURES WITH A FINISHED COLOR OF SIERRA TAN, MODEL 200S-AK, (OR LVVWD APPROVED EQUAL BY ENGINEER) SHALL BE USED FOR 1 1/2" RPPA'S. NO WATER SHALL BE TAKEN FROM A SERVICE REQUIRING BACKFLOW PREVENTION UNTIL THE RPPA HAS BEEN SUCCESSFULLY TESTED BY THE LVVWD. ANY BLOCK WALL OR OTHER FENCE MATERIAL SHALL BE DESIGNED AND CONSTRUCTED AROUND THE OUTSIDE OF THE EASEMENT(S), TO ALLOW THE DISTRICT DIRECT ACCESS FROM THE ADJACENT RIGHT-OF-WAY.

NOTE

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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER

PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA JOSHUA L. JOHNSON No. 15769 PROFESSIONAL ENGINEER Exp. 06/30/2017 DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222

DESIGN: GCW
DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 11:42:16

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS

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Paul Brainard

THE HOWARD HUGHES COMPANY, LLC

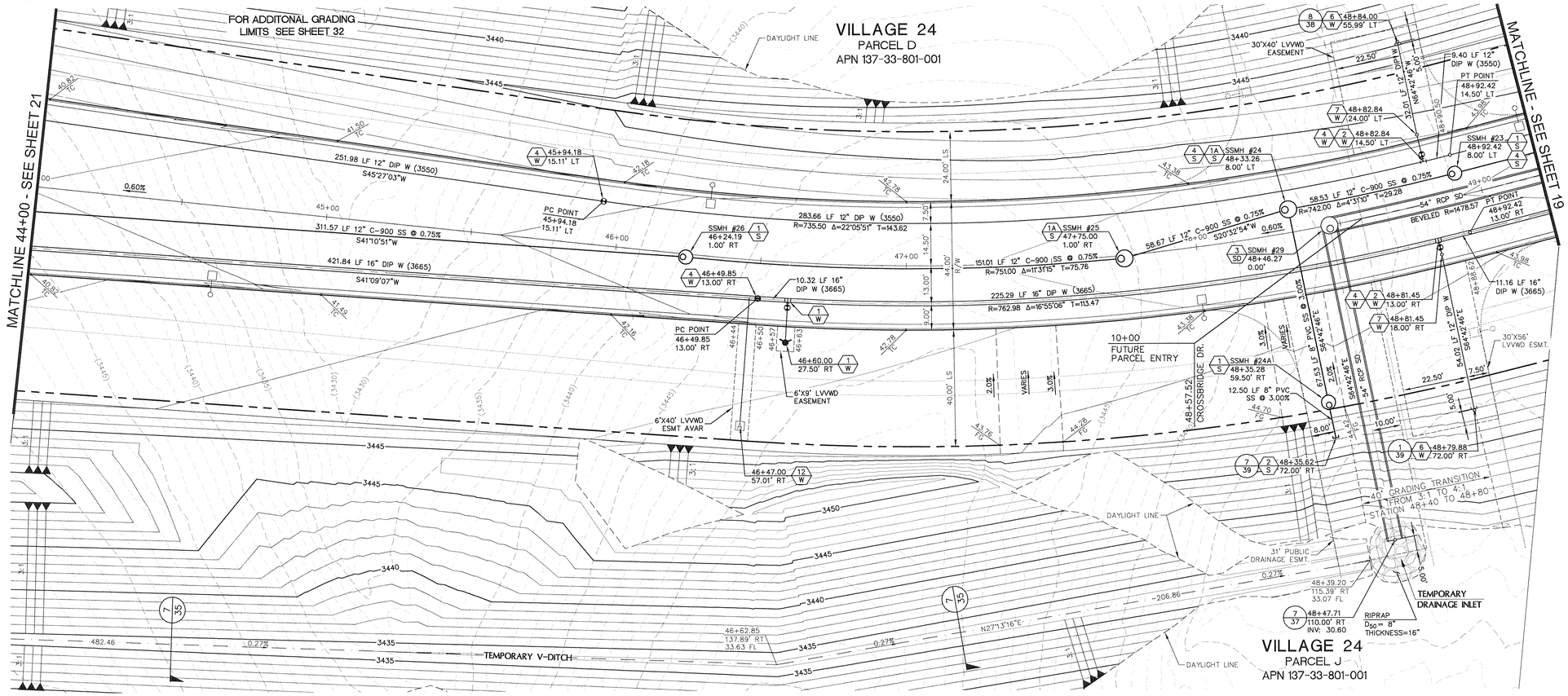
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
UTILITY PLAN AND PROFILE 4

DRAWING 19
19 OF 53 SHTS

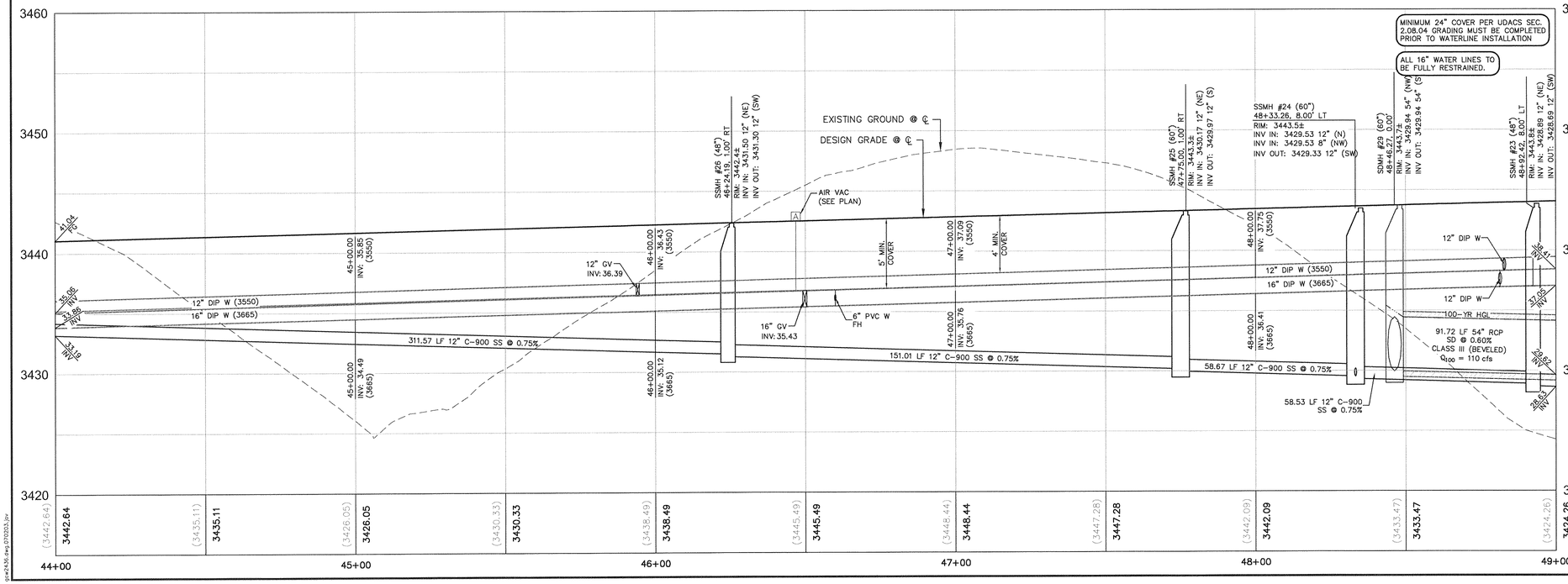
SID NO. 812 PROJECT 2

plot24CB2c19_UP02013.dwg



CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'



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

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call
811
1-800-227-2600
AND
CLARK COUNTY TRAFFIC OPERATIONS
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APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA
JOSHUA J. JOHNSON
No. 15781
PROFESSIONAL ENGINEER
DATE: 10/01/2015

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS

DATE	DESCRIPTION	DATE	APP'D	DATE	APP'D

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 11:47:17

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Paul Brennard

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
UTILITY PLAN AND PROFILE 5

SID NO. 812 PROJECT 2

DRAWING 20
20 OF 53 SHTS

VILLAGE 24
PARCEL C
APN 137-33-801-001

VILLAGE 24
PARCEL D
APN 137-33-801-001

VILLAGE 24
PARCEL J
APN 137-33-801-001

PUBLIC DRAINAGE EASEMENT TO BE PUBLICLY MAINTAINED

PUBLIC ACCESS EASEMENT (PRIVATELY MAINTAINED)

FOR ADDITONAL GRADING LIMITS SEE SHEET 24

FOR ADDITONAL GRADING LIMITS SEE SHEET 31

30'X40' LVVWD EASEMENT

6'X9' LVVWD EASEMENT

6'X40' LVVWD ESMT AVAR

MATCHLINE 39+00 - SEE SHEET 22

MATCHLINE 44+00 - SEE SHEET 20

DAYLIGHT LINE

ACCESS RAMP

COS-1

COS-2

NORTH

SCALE 20 0 20 40 FEET

KEY MAP
NTS

CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'

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

ALL 16" WATER LINES TO BE FULLY RESTRAINED.

DESIGN GRADE @ ℄

EXISTING GROUND @ ℄

SDMH #31 (60") 39+16.00, 14.00' LT
RIM: 3442.2±
INV IN: 3432.63 24" (E)
INV OUT: 3432.63 24" (S)

SSMH #28 (48") 39+49.09, 11.50' RT
RIM: 3442.0±
INV IN: 3436.92 12" (N)
INV OUT: 3436.72 12" (S)

SDMH #30
41+93.40, 14.00' LT
RIM: 3439.8±
INV IN: 3428.34 24" (W)
INV IN: 3428.34 24" (S)
INV OUT: 3428.34 24" (NE)

SSMH #27 (48") 43+12.80, 11.50' RT
RIM: 3434.3±
INV IN: 34.04 12" (NE)
INV OUT: 3433.84 12" (SW)

195.82 LF 12" C-900 SS @ 0.60%

357.73 LF 12" C-900 SS @ 0.75%

167.67 LF 24" RCP SD @ 2.50%
CLASS IV (BEVELED)
Q_{100} = 1 cfs

79.00 LF 24" RCP SD @ 0.50%
CLASS RCP
Q_{100} = 14 cfs

311.57 LF 12" C-900 SS @ 0.75%

3.1'± @ 45° 16" DIP W

12" DIP W

12" GV
INV: 35.40

16" DIP W (3665)

12" DIP W (3550)

BLOW-OFF (SEE PLAN)

AIR VAC (SEE PLAN)

CLSM @ ALL WATER XING

5'X5' RCB (x6)

100-YR HGL

3.2' MAX. @ XING

2.5' MIN. @ XING

18" MIN. @ XING

6" PVC W FH

5' MIN. COVER

4' MIN. COVER

11.25° BEND 39+74.88 INV: 34.68 (3665)

11.25° BEND 42+25.78 INV: 32.76 (3665)

43+00.00 INV: 33.23 (3666)

43+00.00 INV: 34.43 (3556)

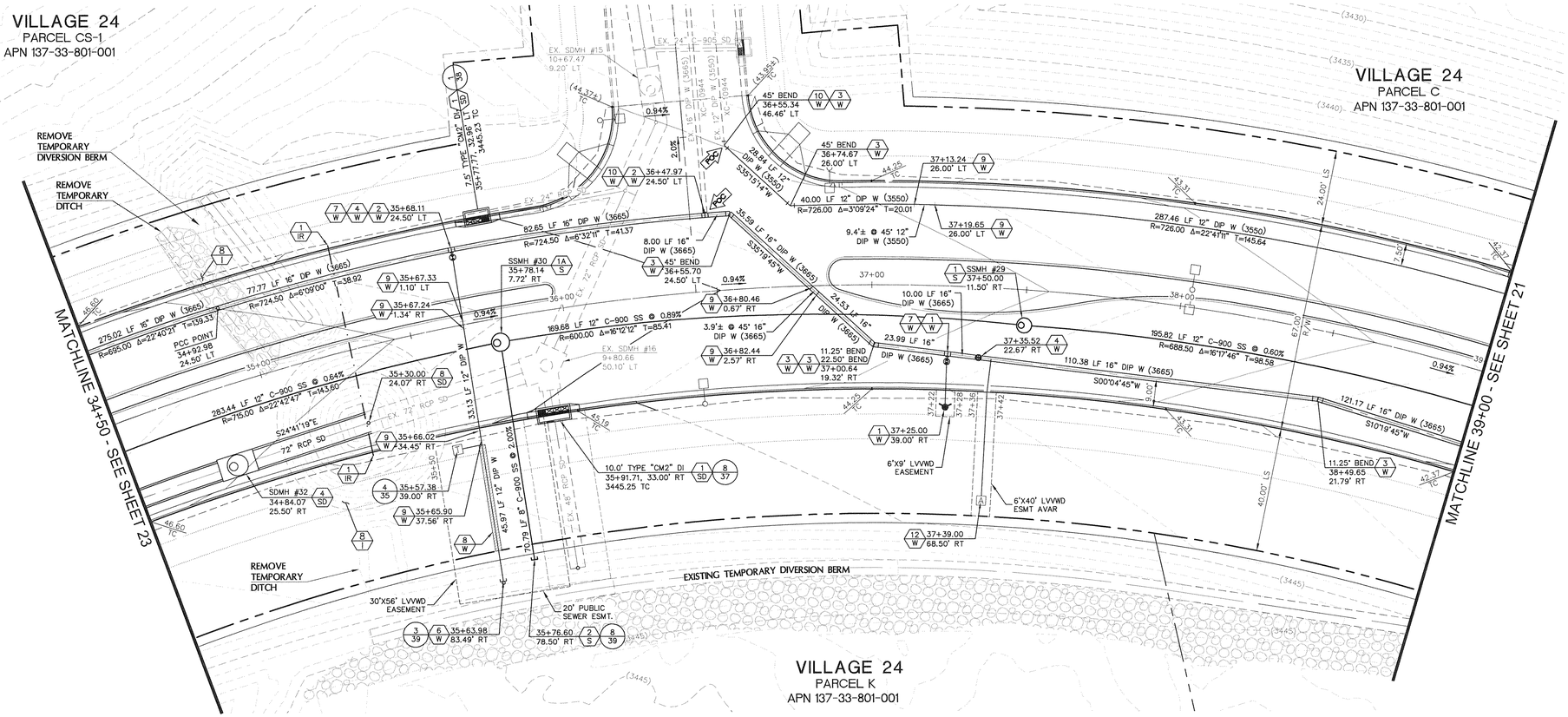
42+27.00 INV: 34.07 (3550)

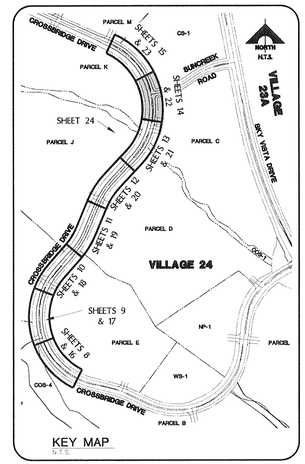
40+38.83 INV: 36.24

40+36.56 INV: 34.05

39+74.88 INV: 35.96 (3550)

| | | |



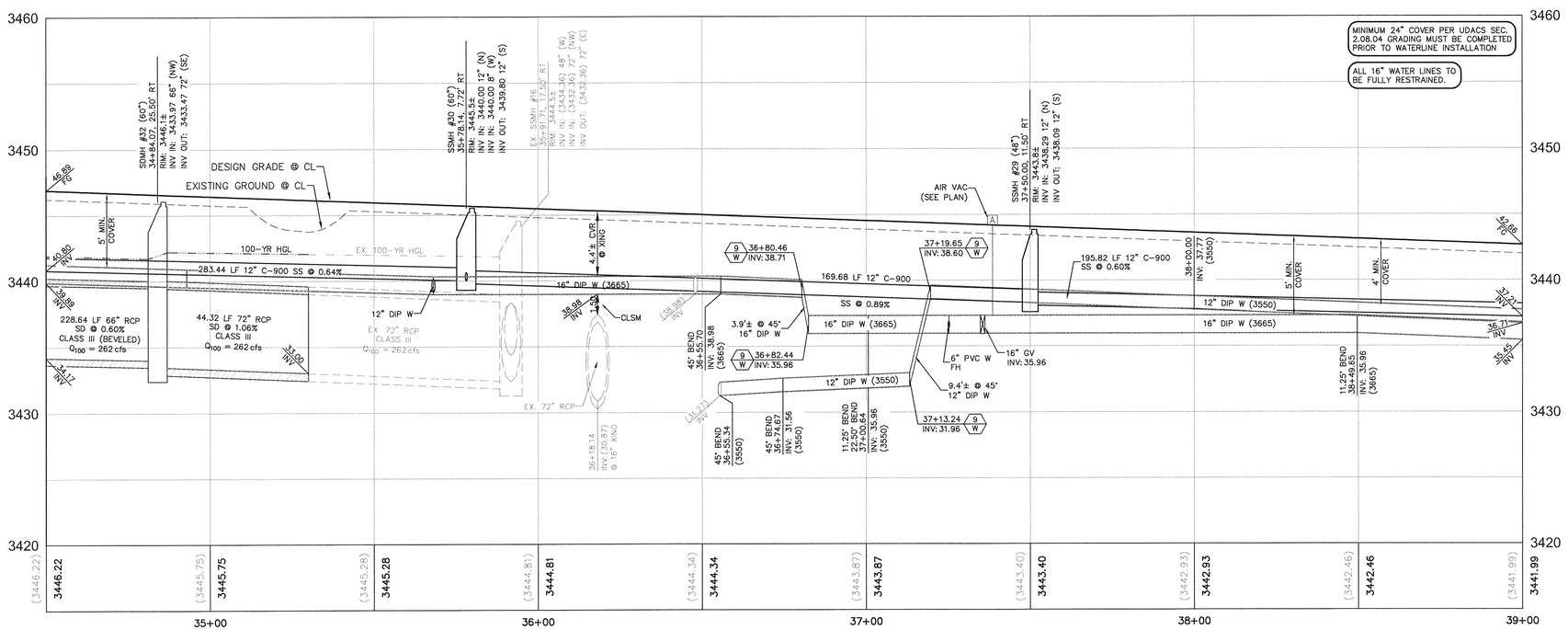


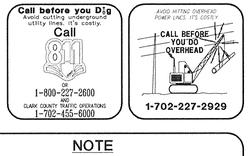
KEY MAP
N.T.S.

SCALE: 20 0 20 40 FEET

CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'





NOTE

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BENCHMARK

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15769
PROFESSIONAL
Civil
Exp. 06/30/2017
DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 11:57:21

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM
LAS VEGAS

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Paul Brennard

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
UTILITY PLAN AND PROFILE 7

SID NO. 812 PROJECT 2

DRAWING 22
22 OF 53 SHTS

ctb=ASIS, dwg, 07/2013, jpv

VILLAGE 24
PARCEL M
APN 137-33-801-001

VILLAGE 24
PARCEL CS-1
APN 137-33-801-001

VILLAGE 24
PARCEL K
APN 137-33-801-001

REMOVE TEMPORARY DIVERSION BERM

PER CLV# 107V6423
EX. RIPRAP
D50=8"
THICKNESS=16"

RIPRAP
D50=8"
THICKNESS=16"
HEIGHT=5'

30+49.52
61.65' LT
57.00 INV

30+69.00 (12 W)
47.06' LT

6'X24' LVVWD ESMT. AVAR

6'X9' LVVWD EASEMENT

32+27.00 (1 W)
36.81' LT

9 / 35
13.00 LF 16" DIP W (3665)

6 W 30+53.95
18.67' LT

FUT. 12.5' TYPE "CM2" DI
30+22.52, 26.34' LT

30+42.92
23.33' LT
56.28 INV

2 S 30+53.60
6.09' RT

30+66.60 (4 W)
18.99' LT

165.19 LF 16" DIP W (3665)
R=695.00 Δ=13°37'05" T=82.98

275.02 LF 16" DIP W (3665)
R=695.00 Δ=22°40'21" T=139.33

234.46 LF 12" C-900 SS @ 1.20%
R=718.00 Δ=18°42'34" T=118.28

BEVELED R=704.00
66" RCP SD

4 SD SDMH #33
32+47.00
23.77' RT

SSMH #31 (1 S)
32+90.88
10.33' RT

283.44 LF 12" C-900 SS @ 0.64%
R=715.00 Δ=22°42'47" T=143.60

BEVELED R=704.00
66" RCP SD

30+33.33
19.60' RT

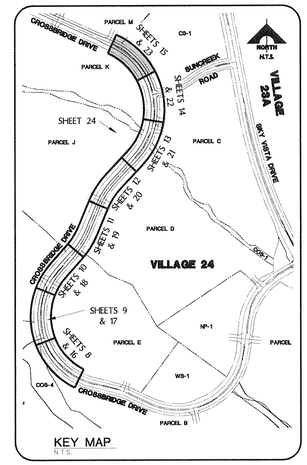
FUT. 12.5' TYPE "CM2" DI
30+32.60, 27.58' RT

30+63.68
END OF CONSTRUCTION

MATCHLINE 34+50 - SEE SHEET 22

NORTH

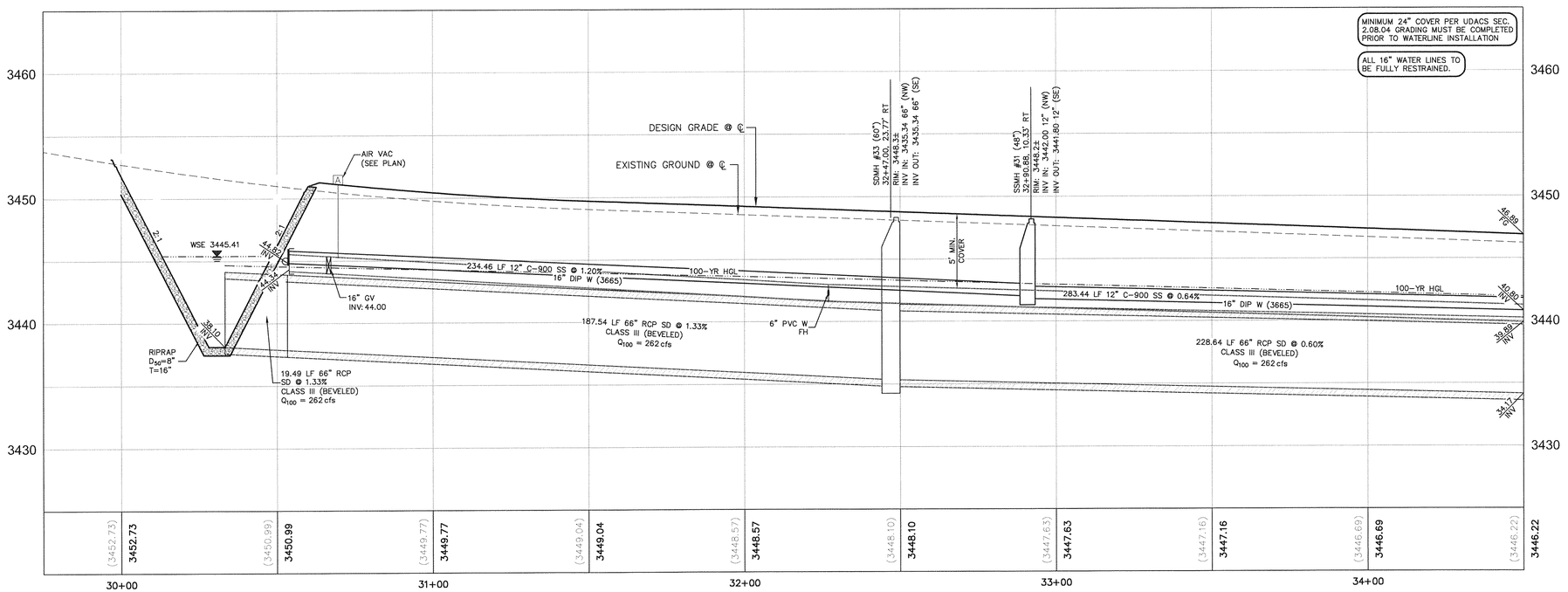
SCALE 20 0 20 40 FEET



KEY MAP
N.T.S.

CROSSBRIDGE DRIVE (PUBLIC)

SCALE: HORIZ 1" = 20'
VERT. 1" = 5'



FAST
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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

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Avoid cutting underground utility lines. It's costly.
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LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15789
PROFESSIONAL
Exp. 6/30/2017
CIVIL
DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION

DATE AGEN APP | DATE GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-01-15
PLOT TIME: 12:02:26

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS
F:\Projects\600\62024-222\DWG\Production\24CB2x23_UTB.dwg
Paul Brennard

THE HOWARD HUGHES COMPANY, LLC

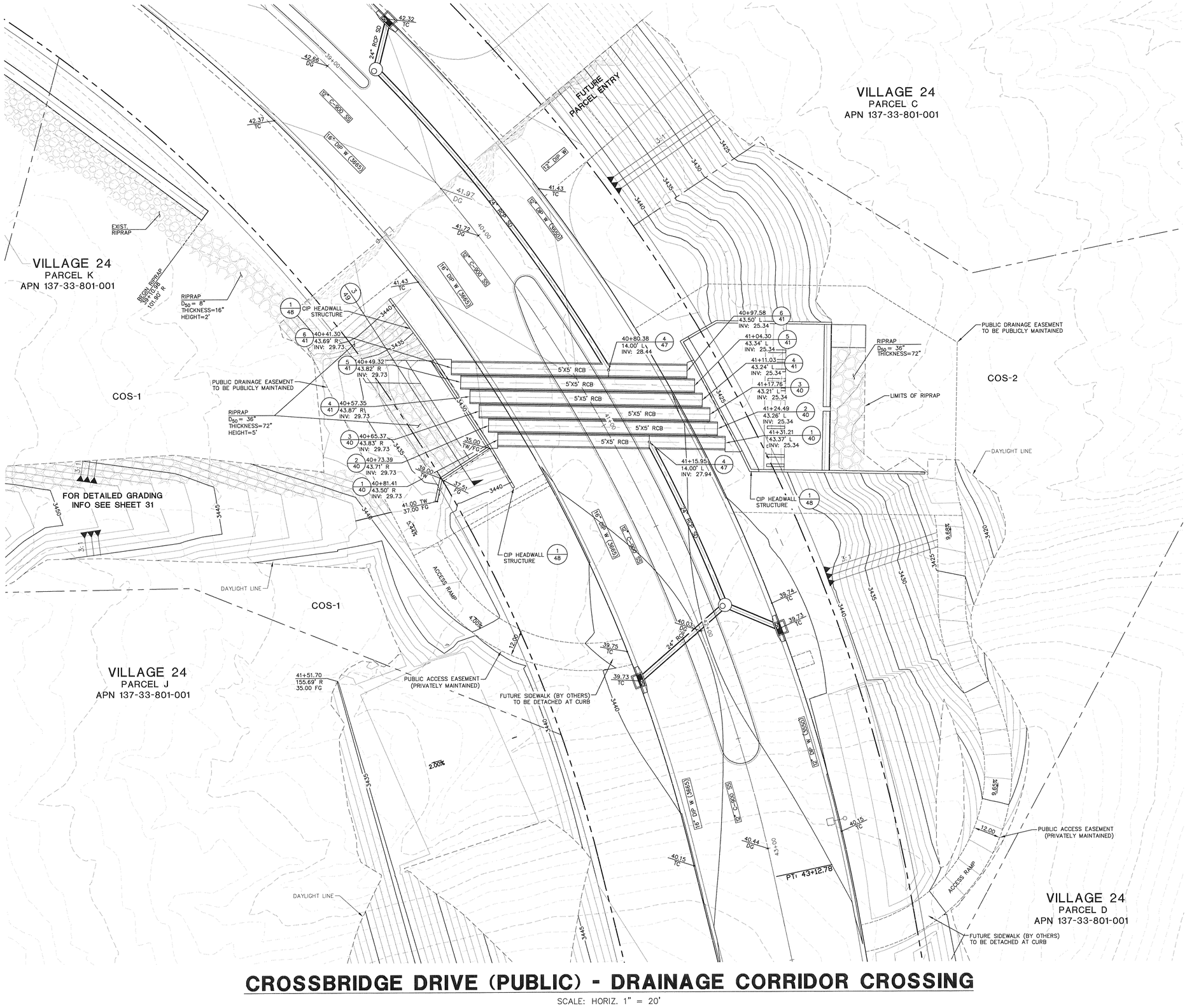
VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
UTILITY PLAN AND PROFILE 8

DRAWING 23
23 OF 53 SHTS

SID NO. 812 PROJECT 2

gce2435.dwg 070223.jpv



CROSSBRIDGE DRIVE (PUBLIC) - DRAINAGE CORRIDOR CROSSING

SCALE: HORIZ. 1" = 20'

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS

BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD. & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

Call before you Dig
Avoid cutting underground utility lines. It's costly.
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AVOID HITTING OVERHEAD POWER LINES. IT'S COSTLY
CALL BEFORE YOU DO OVERHEAD
1-702-227-2929

FAST
Call before you UnderGround
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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15708
PROFESSIONAL
Exp. 06/30/2017
CIVIL
DATE 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
	DATE	AGEN APP
	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 11:34:00

G.C. WALLACE COMPANIES
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LAS VEGAS

F:\Projects\600\62024-222\DWG\Production\24CB2c24_G01.dwg
Lupe Gracia

THE HOWARD HUGHES COMPANY, LLC

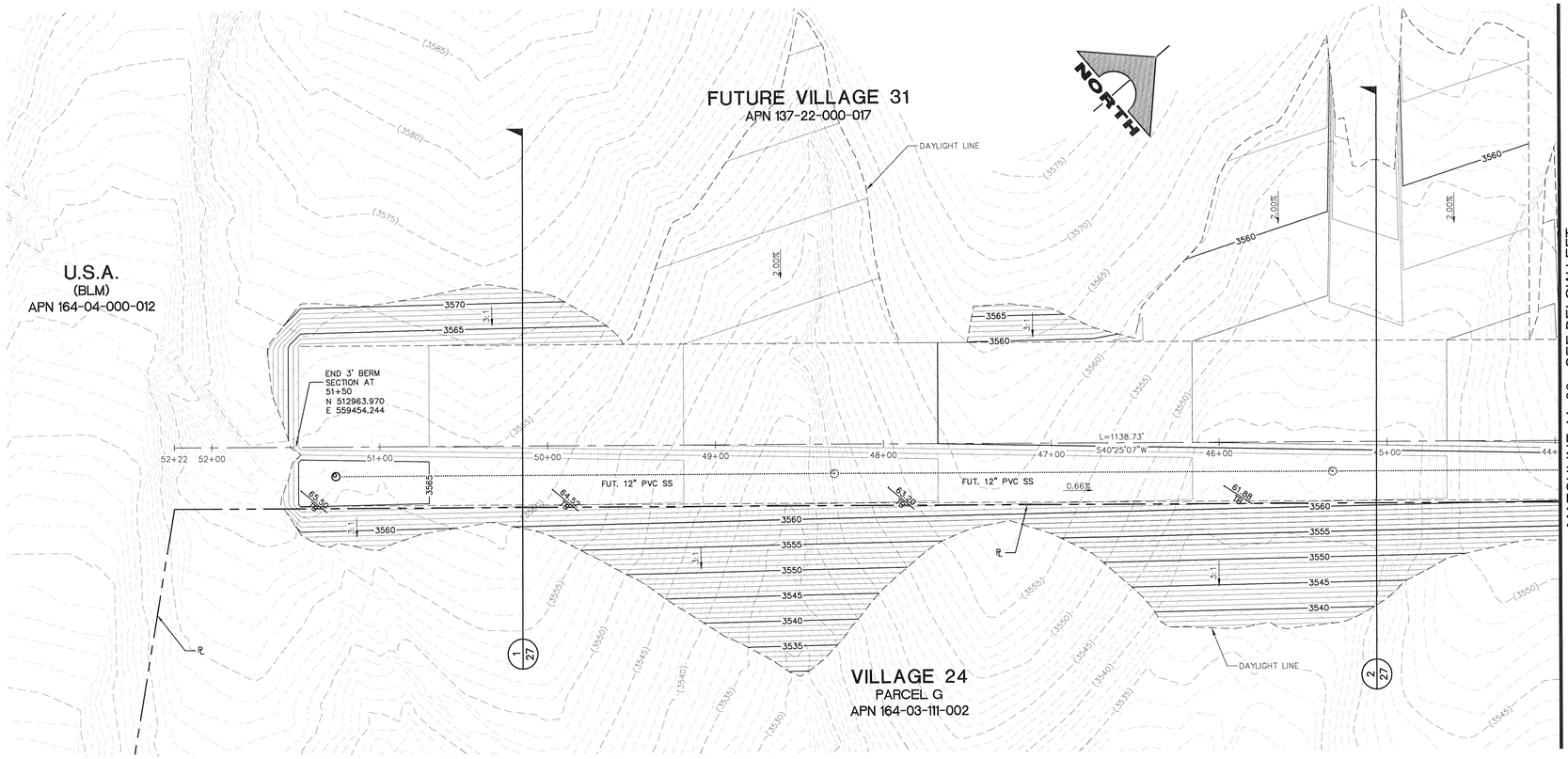
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

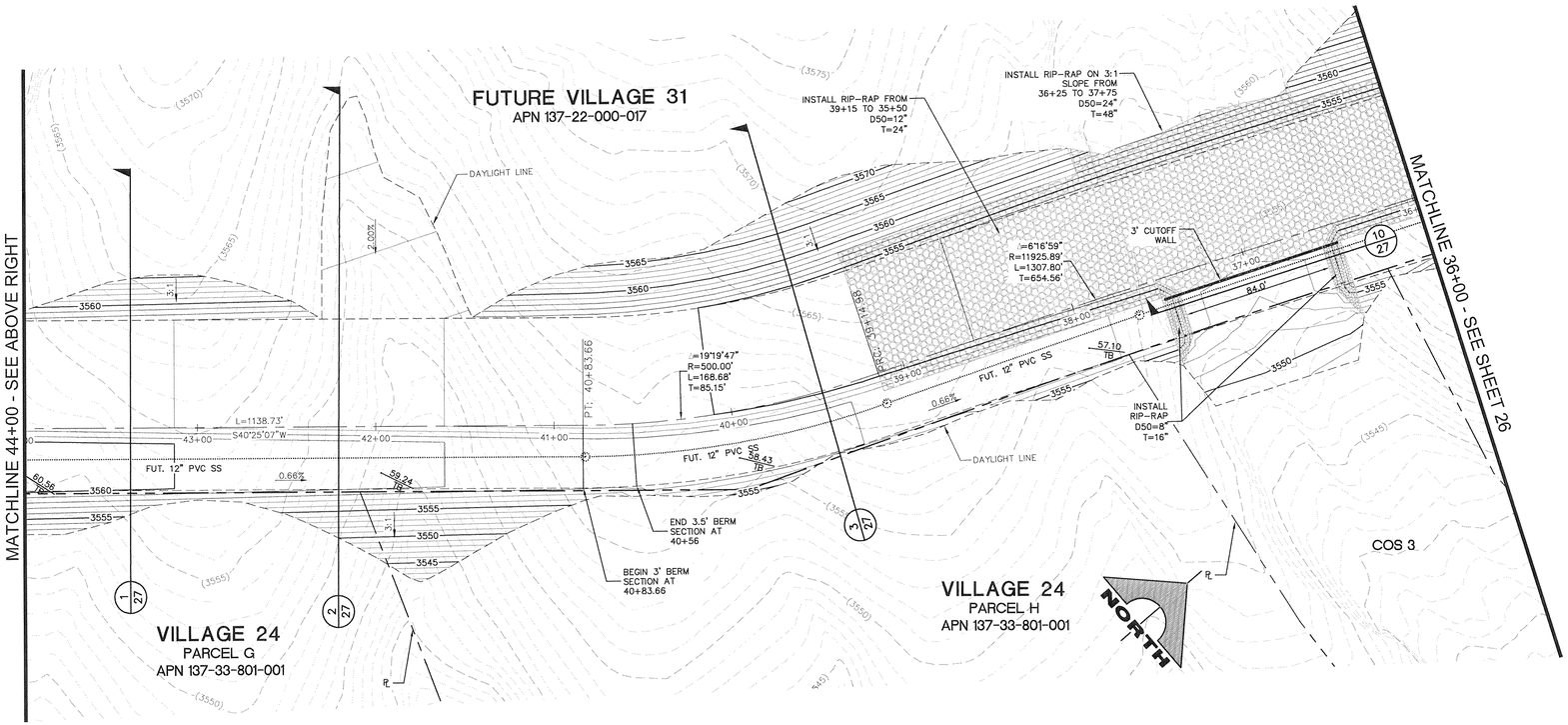
CROSSBRIDGE DRIVE
GRADING AT DRAINAGE CORRIDOR CROSSING

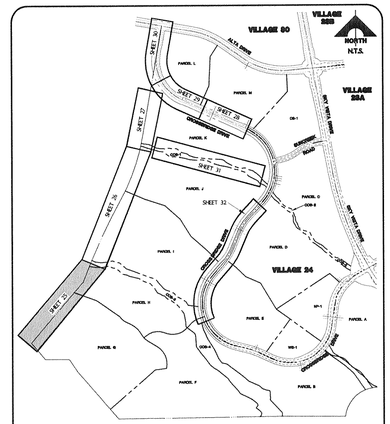
DRAWING 24
24 OF 53 SHTS

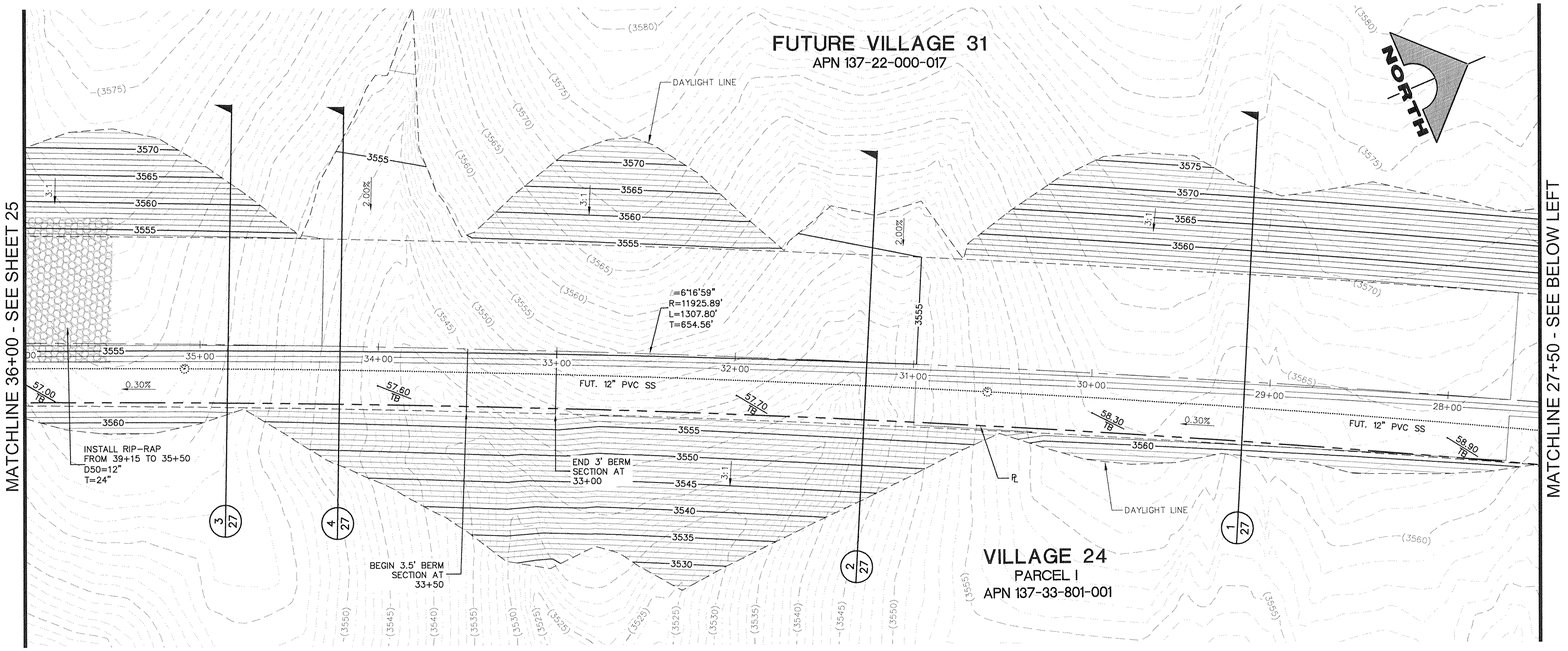
SID NO. 812 PROJECT 2

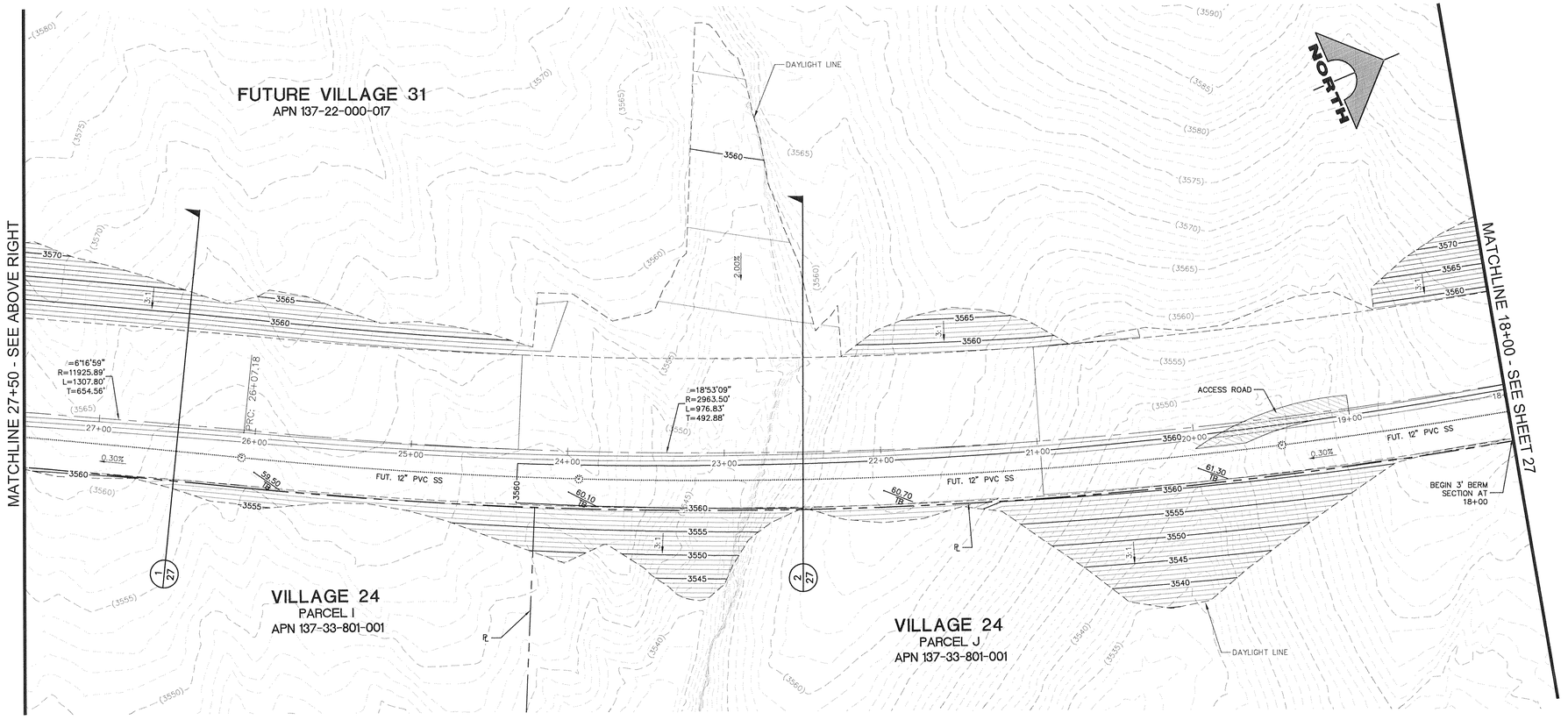
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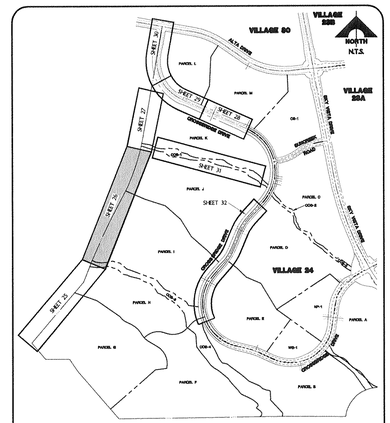

FUTURE VILLAGE 31
APN 137-22-000-017
NORTH
DAYLIGHT LINE
U.S.A.
(BLM)
APN 164-04-000-012
END 3' BERM SECTION AT 51+50
N 512963.970
E 559454.244
L=1138.73'
S40°25'07"W
FUT. 12" PVC SS
0.66%
2.00%
3:1
VILLAGE 24
PARCEL G
APN 164-03-111-002
MATCHLINE 44+00 - SEE BELOW LEFT


FUTURE VILLAGE 31
APN 137-22-000-017
MATCHLINE 44+00 - SEE ABOVE RIGHT
MATCHLINE 36+00 - SEE SHEET 26
DAYLIGHT LINE
INSTALL RIP-RAP FROM 39+15 TO 35+50 D50=12" T=24"
INSTALL RIP-RAP ON 3:1 SLOPE FROM 36+25 TO 37+75 D50=24" T=48"
Δ=6°16'59"
R=11925.89'
L=1307.80'
T=654.56'
Δ=19°19'47"
R=500.00'
L=168.68'
T=85.15'
3' CUTOFF WALL
INSTALL RIP-RAP D50=8" T=16"
L=1138.73'
S40°25'07"W
FUT. 12" PVC SS
0.66%
2.00%
3:1
P.I. 40+83.66
END 3.5' BERM SECTION AT 40+56
BEGIN 3' BERM SECTION AT 40+83.66
COS 3
VILLAGE 24
PARCEL H
APN 137-33-801-001
VILLAGE 24
PARCEL G
APN 164-03-111-002
NORTH


VILLAGE 60
VILLAGE 23B
VILLAGE 23A
VILLAGE 24
NORTH
N.T.S.
SHEET 1
SHEET 2
SHEET 3
SHEET 4
SHEET 5
SHEET 6
SHEET 7
SHEET 8
SHEET 9
SHEET 10
SHEET 11
SHEET 12
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SHEET 52
SHEET 53
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PARCEL M
PARCEL K
PARCEL J
PARCEL I
PARCEL H
PARCEL G
PARCEL F
PARCEL E
PARCEL D
PARCEL C
PARCEL B
PARCEL A
CB-1
CB-2
CB-3
CB-4
MH-1
MH-2
MH-3
MH-4
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MH-34
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MH-36
MH-37
MH-38
MH-39
MH-40







LOCATION/SHEET INDEX MAP

SCALE 40 0 40 80 FEET

NOTE

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BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER - STATE OF NEVADA
JOSHUA J. JOHNSON
No. 15789
PROFESSIONAL
CIVIL
DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 12:06:31

G.C. WALLACE COMPANIES
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LAS VEGAS

F:\Projects\620\62024-222\DWG\Production\24GB2x26_G03.dwg
Paul Bremond

THE HOWARD HUGHES COMPANY, LLC

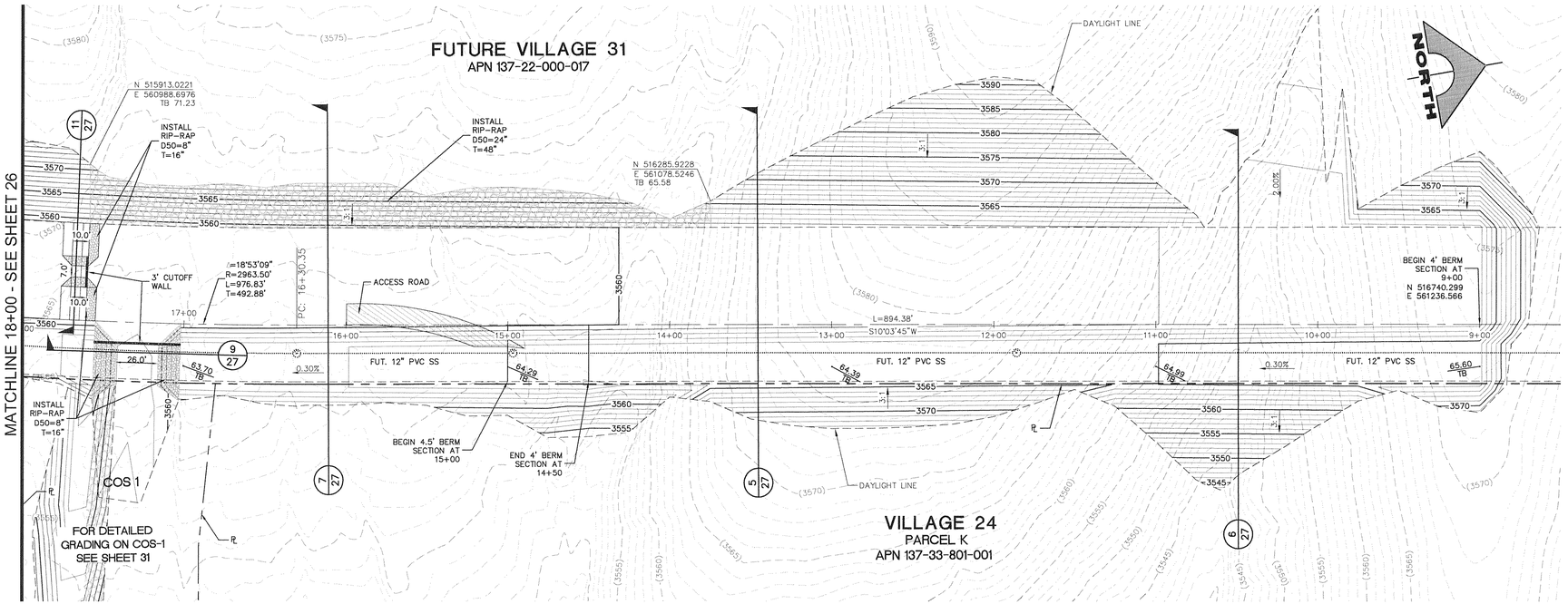
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

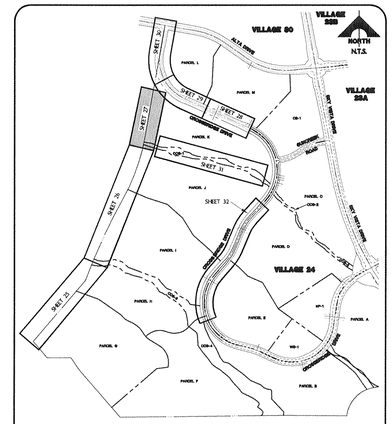
WESTERN BORDER CHANNEL 2

DRAWING 26
26 OF 53 SHTS

SID NO. 812 PROJECT 2

G:\24236.dwg 070203.jpv





LOCATION/SHEET INDEX MAP

40 0 40 80
SCALE FEET

NOTE

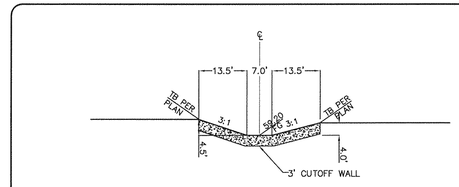
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BASIS OF BEARINGS

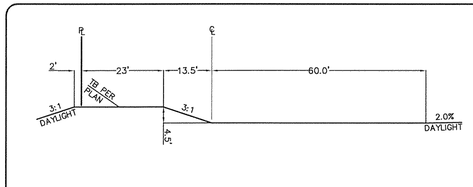
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BENCHMARK

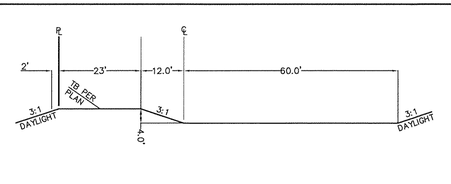
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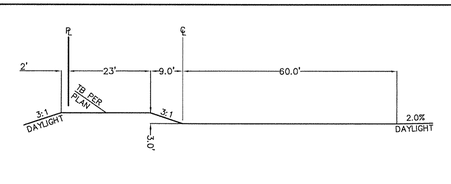
WESTERN BORDER COS-1 SPILLWAY — 11
TYPICAL SECTION — NOT TO SCALE



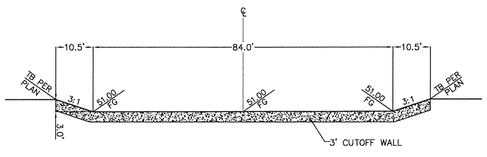
4.5' WESTERN BORDER CHANNEL (2% DAYLIGHT) — 8
TYPICAL SECTION — NOT TO SCALE



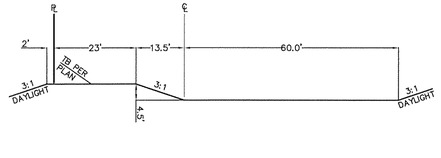
4' WESTERN BORDER CHANNEL (3:1 DAYLIGHT) — 5
TYPICAL SECTION — NOT TO SCALE



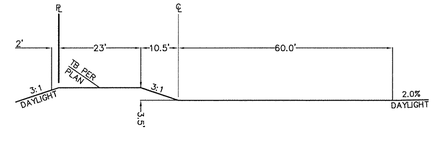
3' WESTERN BORDER CHANNEL (2% DAYLIGHT) — 2
TYPICAL SECTION — NOT TO SCALE



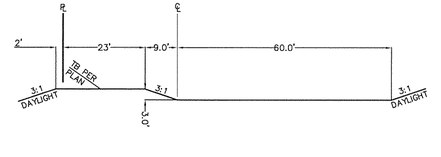
WESTERN BORDER COS-3 OPENING TRANSITION — 10
TYPICAL SECTION — NOT TO SCALE



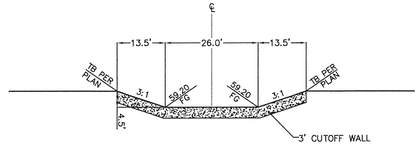
4.5' WESTERN BORDER CHANNEL (3:1 DAYLIGHT) — 7
TYPICAL SECTION — NOT TO SCALE



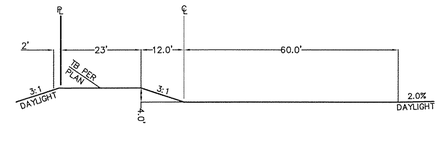
3.5' WESTERN BORDER CHANNEL (2% DAYLIGHT) — 4
TYPICAL SECTION — NOT TO SCALE



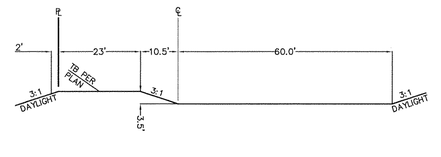
3' WESTERN BORDER CHANNEL (3:1 DAYLIGHT) — 1
TYPICAL SECTION — NOT TO SCALE



WESTERN BORDER COS-1 OPENING TRANSITION — 9
TYPICAL SECTION — NOT TO SCALE



4' WESTERN BORDER CHANNEL (2% DAYLIGHT) — 6
TYPICAL SECTION — NOT TO SCALE



3.5' WESTERN BORDER CHANNEL (3:1 DAYLIGHT) — 3
TYPICAL SECTION — NOT TO SCALE

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AND CLARK COUNTY TRAFFIC OPERATIONS 1-702-455-6000

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FAST
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FREEWAY AND ARTERIAL SYSTEM OF TRANSPORTATION

ENGINEER - STATE OF NEVADA - PROFESSIONAL - JOSHUA J. JOHNSON - No. 15768 - 09/30/2017 - DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 12:07:52

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LAS VEGAS

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Paul Bremond

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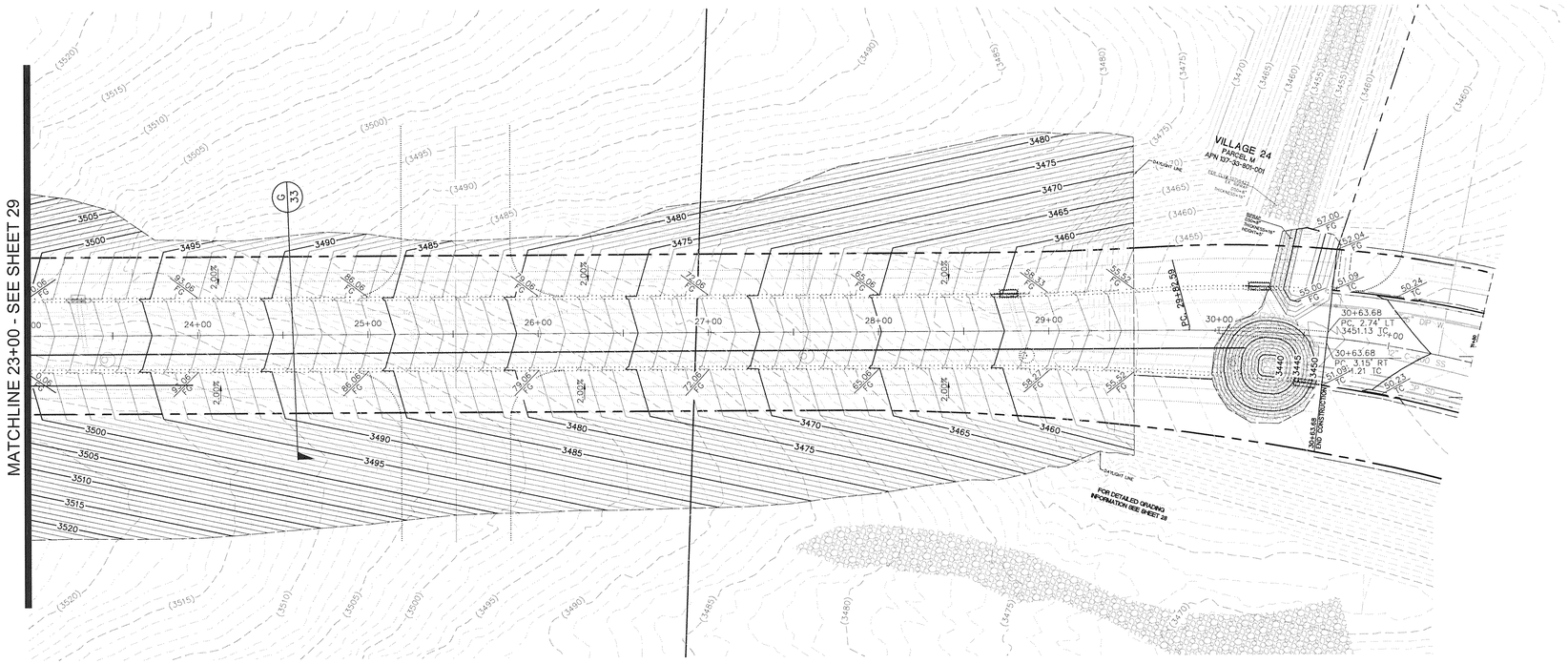
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS

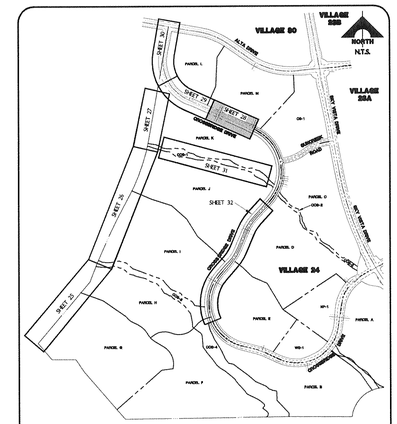
WESTERN BORDER CHANNEL 3

DRAWING 27
27 OF 53 SHTS

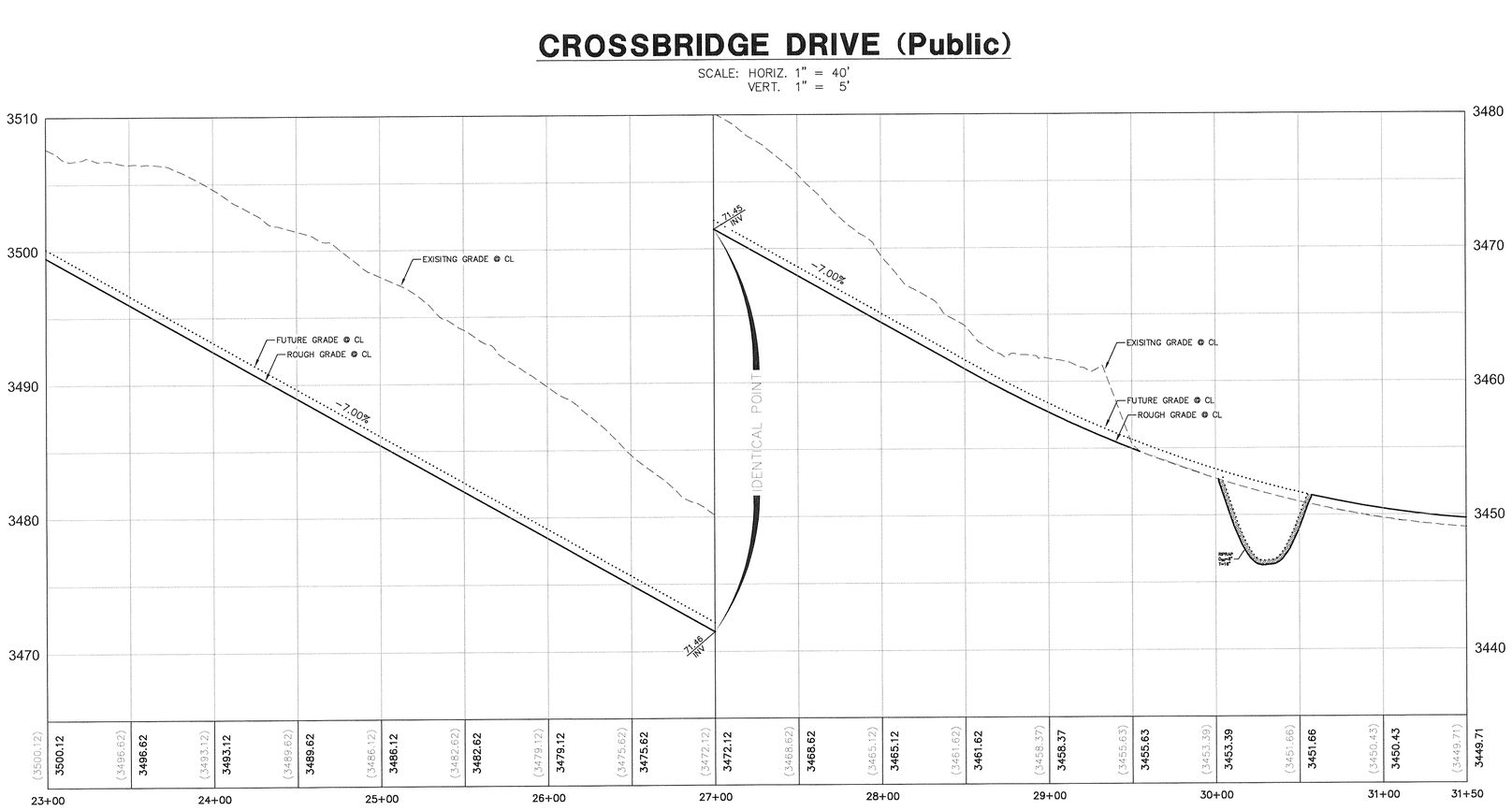
SID NO. 812 PROJECT 2

24x36.dwg 070203.plv





LOCATION/SHEET INDEX MAP



FAST
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LAS VEGAS

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Paul Brennard

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
CROSSBRIDGE DRIVE ROUGH GRADE 1

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 12:10:23

DRAWING 28
28 OF 53 SHTS

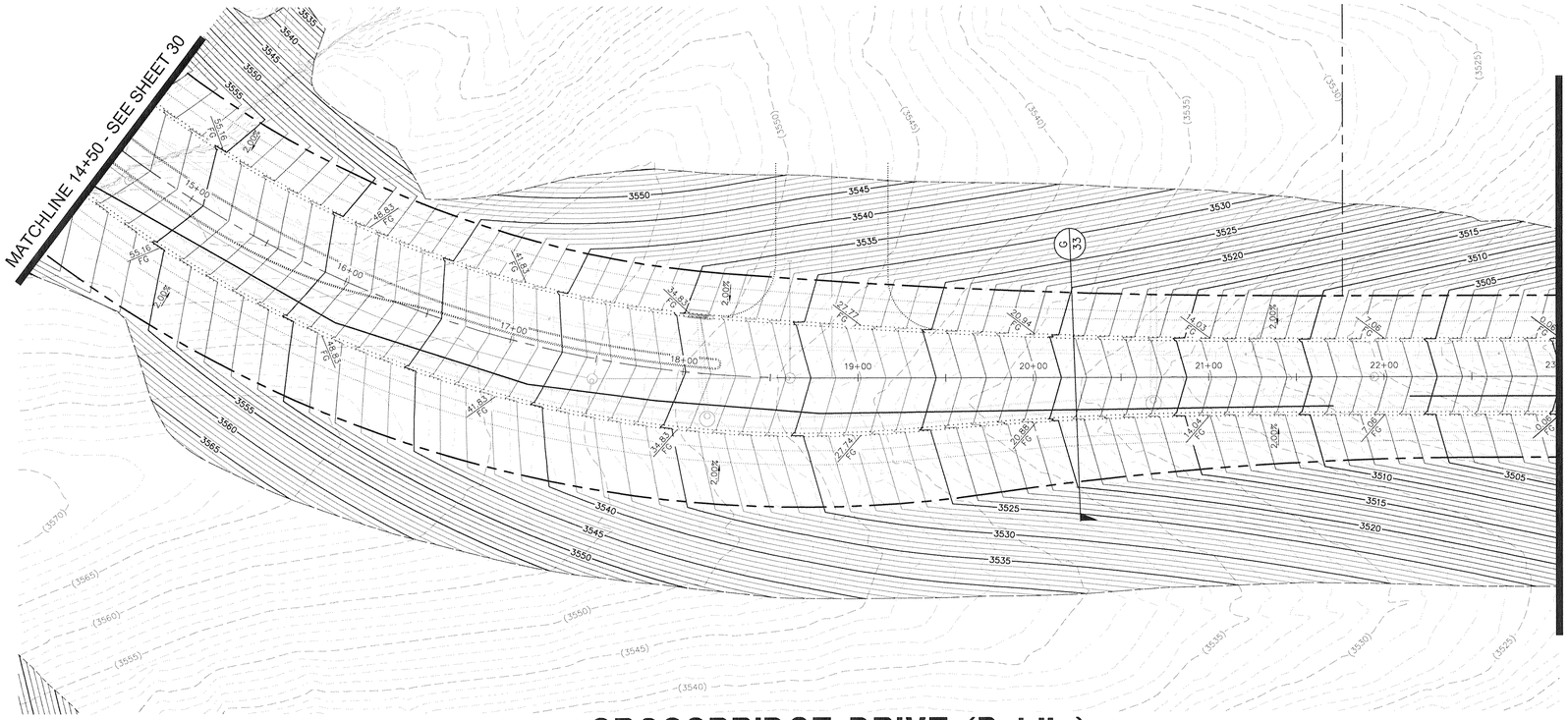
SID NO. 812 PROJECT 2

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

ENGINEER - STATE OF NEVADA
JOSHUA J. JOHNSON
No. 15186
PROFESSIONAL
CIVIL
DATE: 10/01/2015

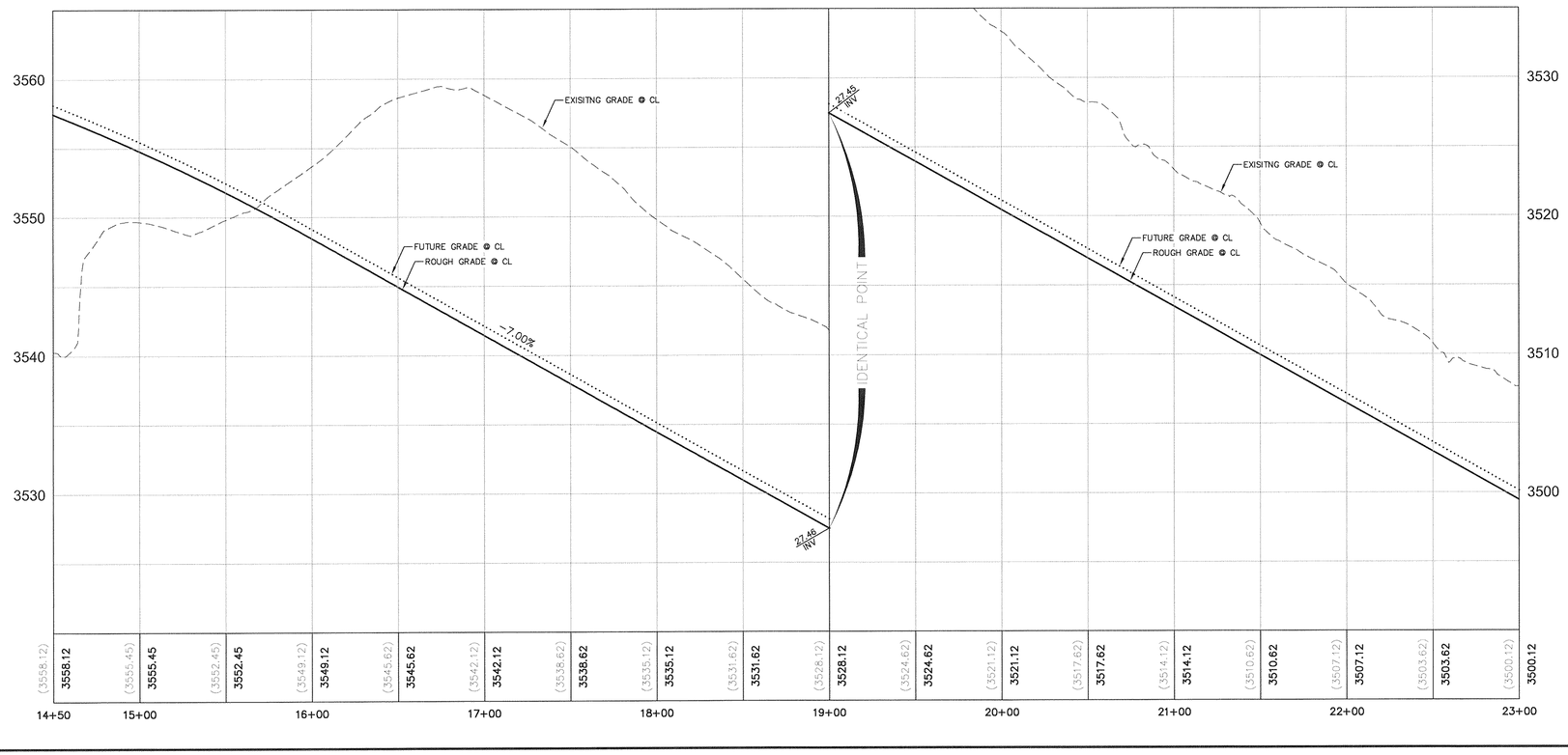
TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

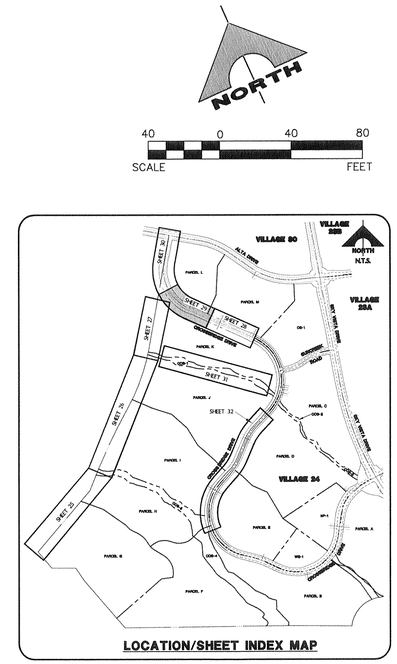
gcw2436.dwg 070203.pv



CROSSBRIDGE DRIVE (Public)

SCALE: HORIZ. 1" = 40'
VERT. 1" = 5'





LOCATION/SHEET INDEX MAP

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

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ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15789 - PROFESSIONAL - Exp. 06/30/2017 - CIVIL

DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

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PROJECT NO. 62024-222

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CHECK: JLJ
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PLOT TIME: 12:12:54

G.C. WALLACE COMPANIES
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1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.3000 F: 702.804.3299 GCWALLACE.COM
LAS VEGAS

F:\Projects\000\62024-222\DWG\Production\24CB2E29_G06.dwg
Paul Brennard

THE HOWARD HUGHES COMPANY, LLC

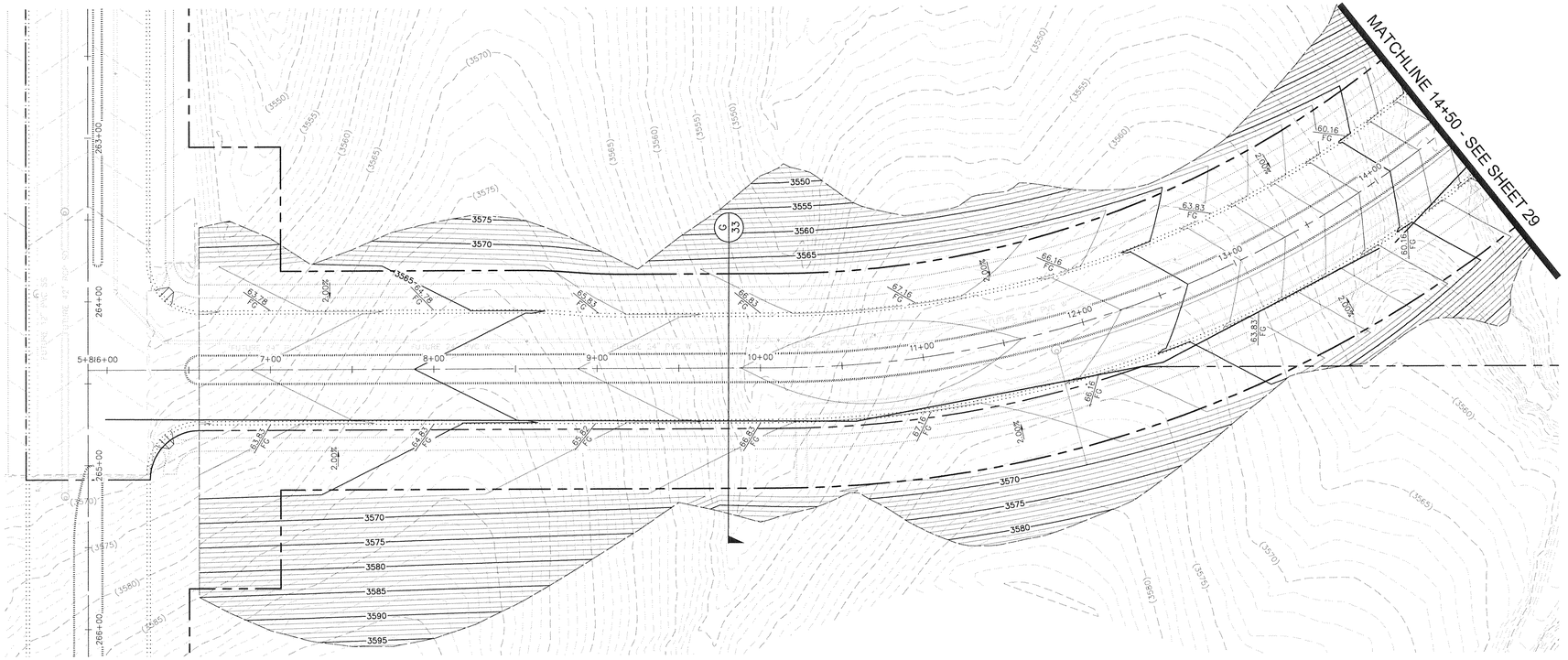
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
CROSSBRIDGE DRIVE ROUGH GRADE 2

DRAWING
29
29 OF 53 SHTS

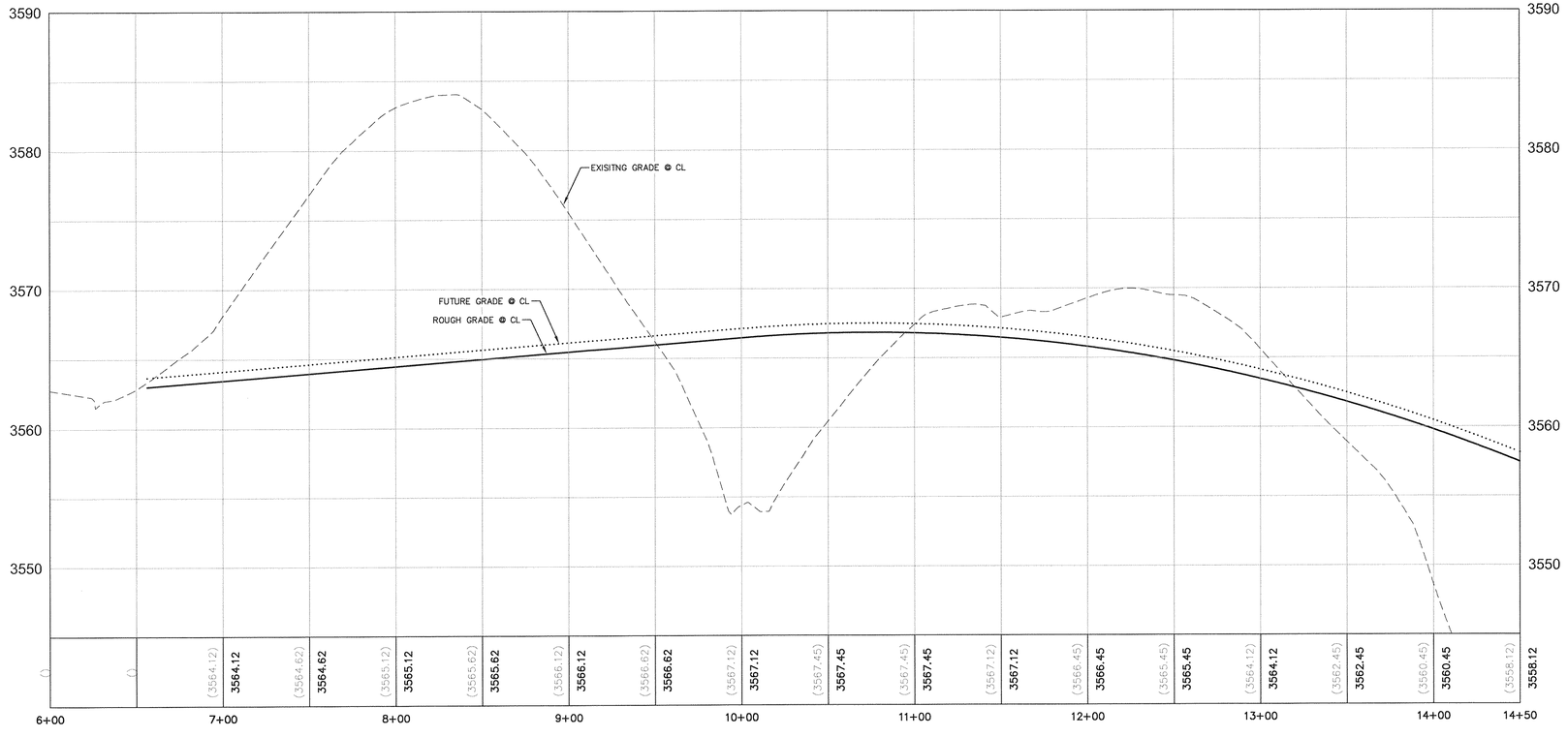
SID NO. 812 PROJECT 2

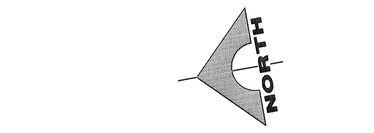
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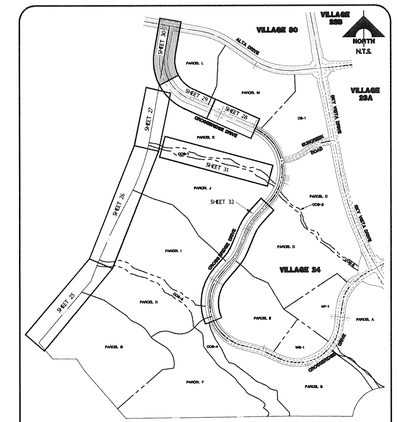


CROSSBRIDGE DRIVE (Public)

SCALE: HORIZ. 1" = 40'
VERT. 1" = 5'







LOCATION/SHEET INDEX MAP

Call before you Dig
Avoid cutting underground utility lines, it's costly.
Call 811
or
1-800-227-2600
AND
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

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

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

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15789
EXP. 06/30/2017
CIVIL
PROFESSIONAL

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 12:15:24

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 F: 702.804.2299 GCWALLACE.COM
LAS VEGAS

F:\Projects\600\62024-222\DWG\Production\24GB2x30_G07.dwg
Paul Bremond

THE HOWARD HUGHES COMPANY, LLC

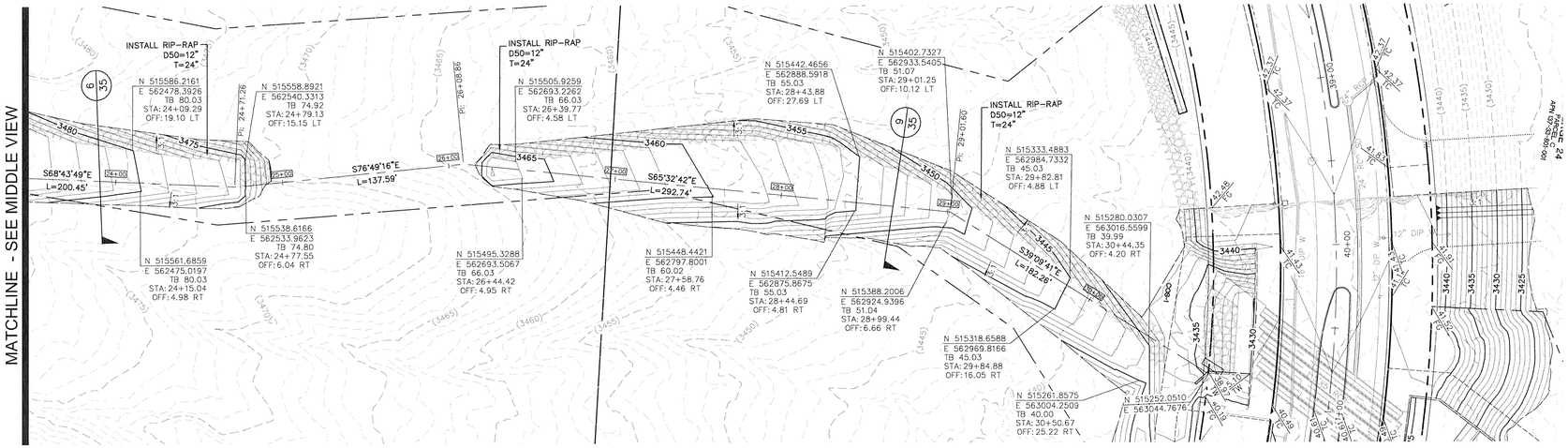
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

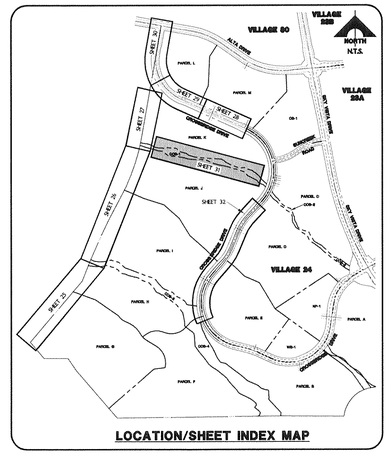
CROSSBRIDGE DRIVE
CROSSBRIDGE DRIVE ROUGH GRADE 3

DRAWING
30
30 OF 53 SHTS

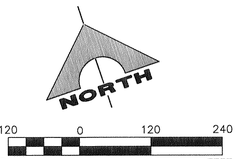
SID NO. 812 PROJECT 2

G24x24x36_dwg 070203.jpg





LOCATION/SHEET INDEX MAP



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

Call before you Dig
Avoid cutting underground utility lines in your vicinity.
Call 811
or
1-800-227-2600
and
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

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

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS.

BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

STATE OF NEVADA — JOSHUA L. JOHNSON — No. 15781 — PROFESSIONAL ENGINEER — Exp. 06/30/2017

DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62024-222

DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 09:53:05

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS

F:\Projects\600\62024-222\DWG\Production\24282s31_G08.dwg
Lupe Gracia

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CROSSBRIDGE DRIVE
COS-1 BERM GRADING

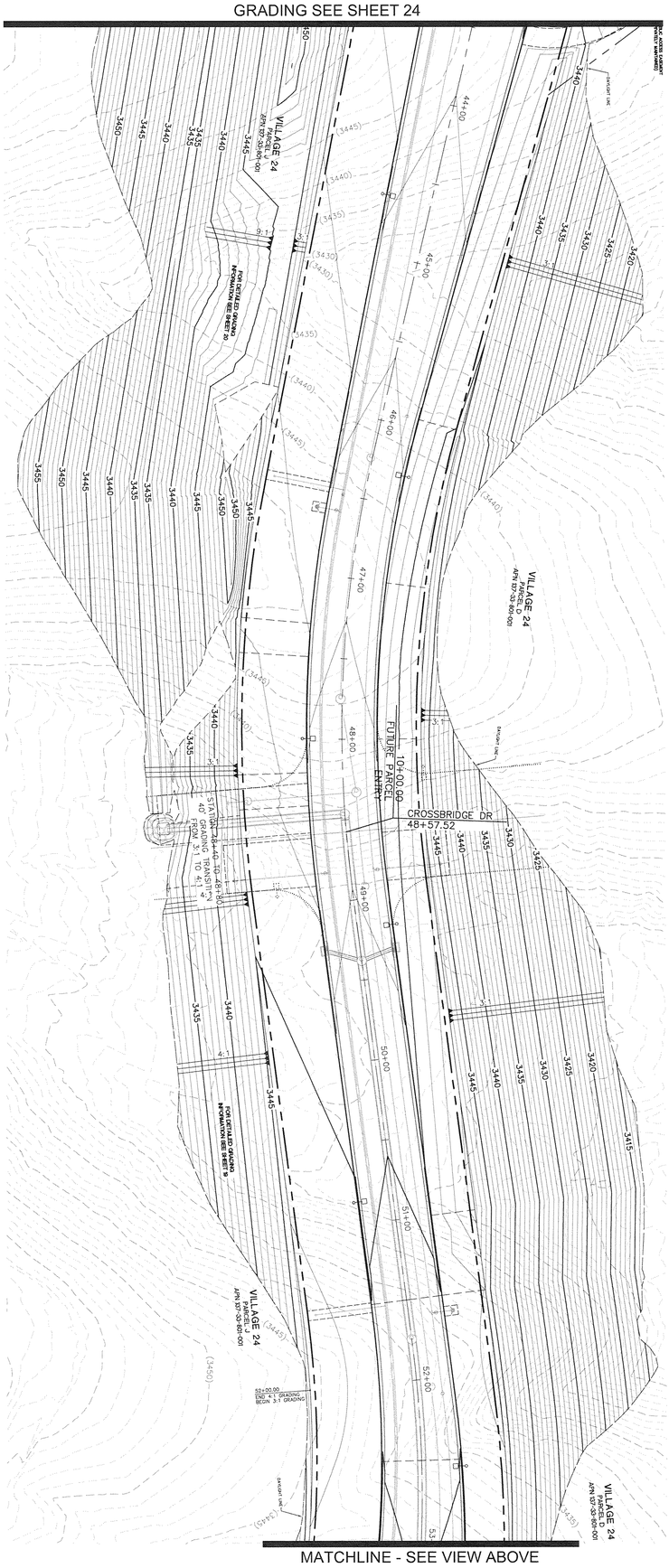
SID NO. 812 PROJECT 2

DRAWING 31
31 OF 53 SHTS

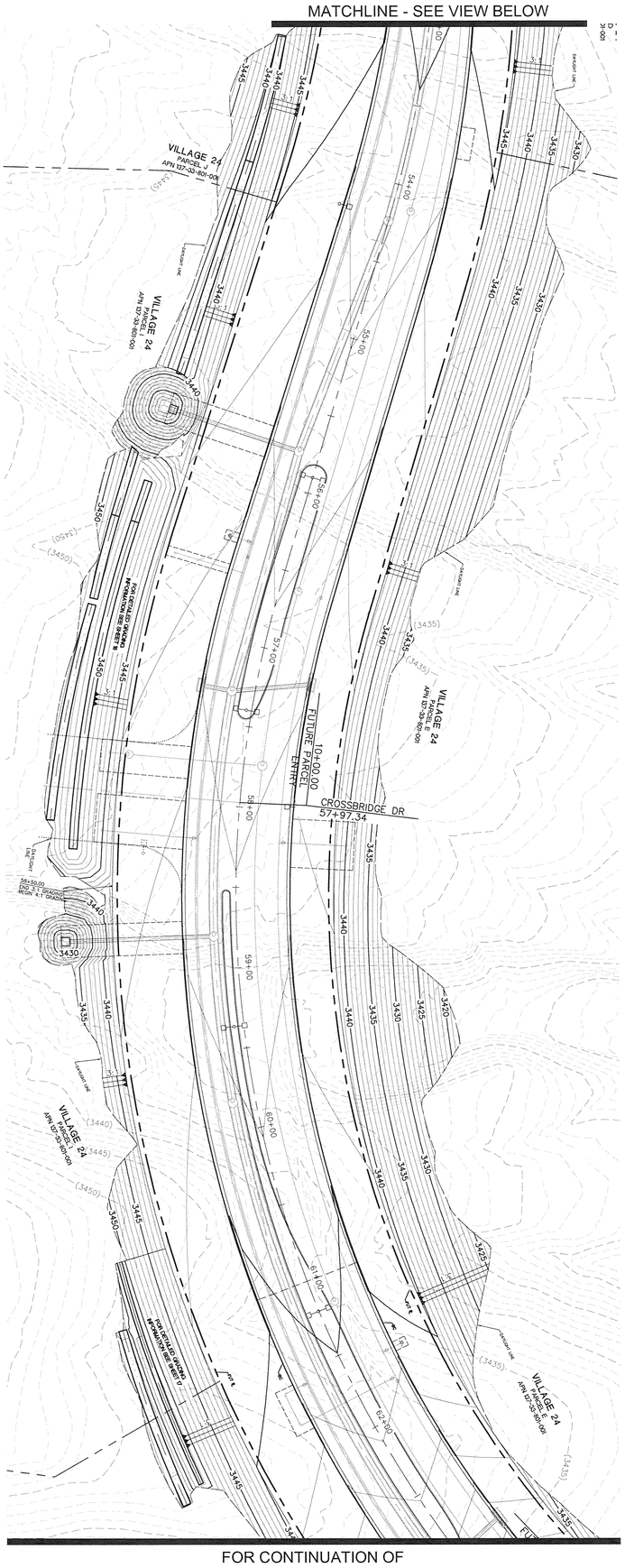
grs24282s31_dwg.070203.jpg

gcw2436.dwg,070203.jov

FOR CONTINUATION OF GRADING SEE SHEET 24



MATCHLINE - SEE VIEW BELOW



BENCHMARK

BM #	DESCRIPTION	(FEET)	(METERS)
	NAVD 88 DATUM		
CLV BM No. 0.356	U.S.C. & G.S. DISC SET IN ROCK, 0.5' SOUTH OF CENTERLINE OF DETENTION BASIN, 4' WEST	3246.63	989.574
	NAVD 88 DATUM		

BASIS OF BEARINGS

SOUTH 89°47'23" EAST, BEING THE BEARING OF THE NORTH LINE OF SECTION 13, TOWNSHIP 20 SOUTH, RANGE 59 EAST, M.D.M., AS SHOWN BY PLAT RECORDED IN BOOK 51 OF PARCEL MAPS, PAGE 100, ON FILE AT THE CLARK COUNTY, NEVADA RECORDER'S OFFICE.

NOTE

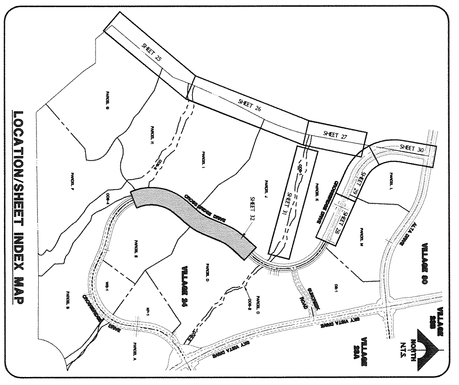
THIS SET OF DRAWINGS IS BASED UPON NAVD 88L DATUM PROJECTION. ALL FIELD OPERATIONS SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS

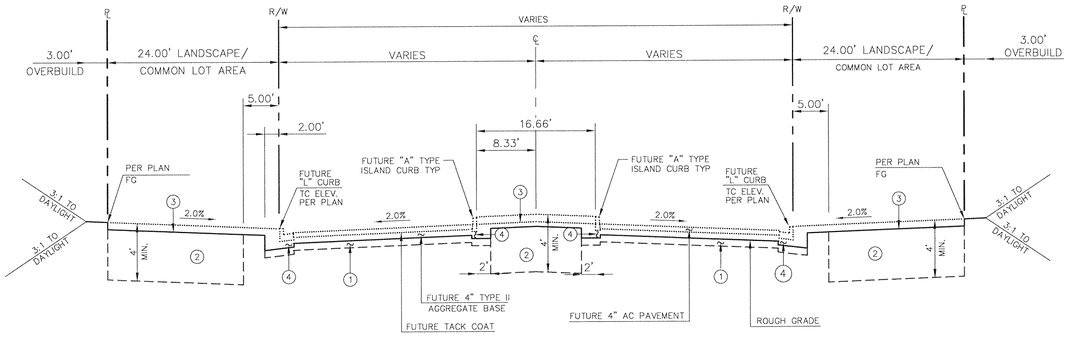
Call before you Dig — Call 1-800-227-2600 or 1-702-455-6000

1-702-227-2929 — FOR TRUCK ACCESS TO PROPERTY CONTACT FIELD REPRESENTATIVE

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

LOCATION/SHEET INDEX MAP





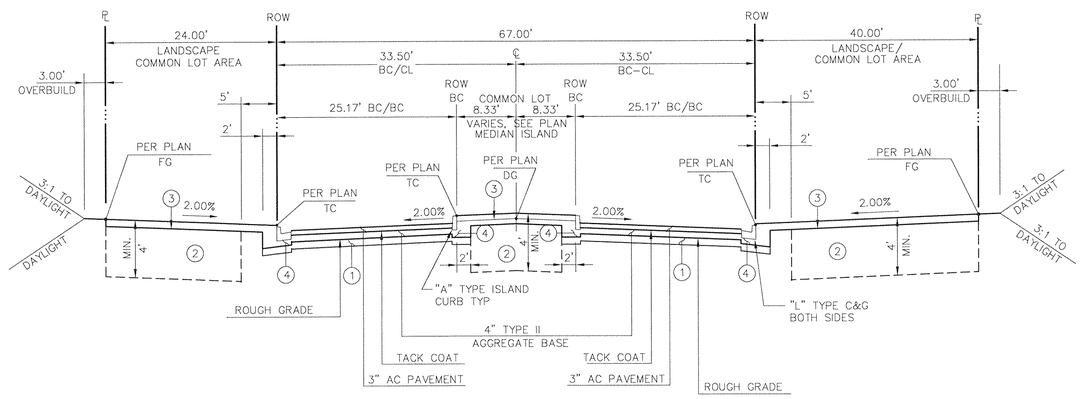
NOTES

1. — 6" TYPE I OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%.
2. — LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR 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.

FUT. CROSSBRIDGE DRIVE TYPCIAL SECTION

(PUBLIC NEIGHBORHOOD COLLECTOR LEVEL 1 WITH SHARED BIKE LANES) NOT TO SCALE — G / —

FROM STATIONS: 05+88.00 TO 30+50.00



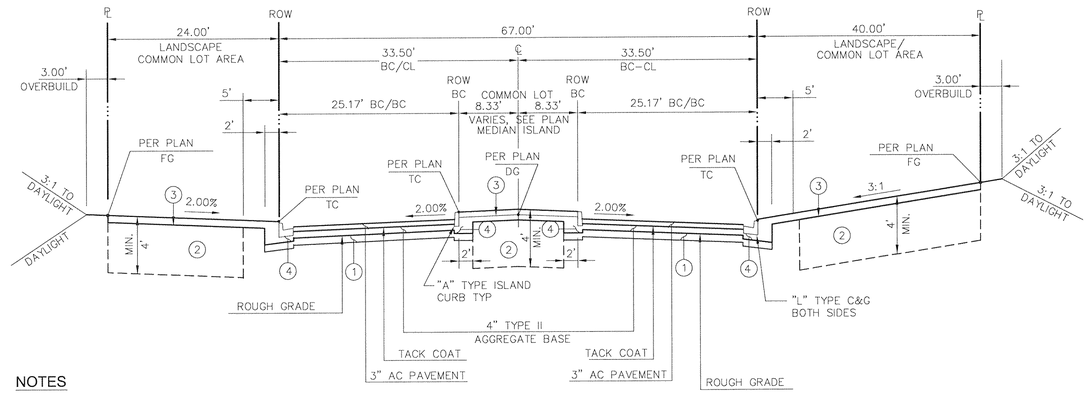
NOTES

1. — 6" TYPE I OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%.
2. — LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR 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.

CROSSBRIDGE DRIVE TYPICAL SECTION

(PUBLIC NEIGHBORHOOD COLLECTOR LEVEL 1 WITH SHARED BIKE LANES) NOT TO SCALE — D / —

FROM STATIONS: 30+63.68 TO 39+16.30, 40+30.71 TO 42+43.00
55+89.86 TO 57+41.95, 58+54.39 TO 62+00.00



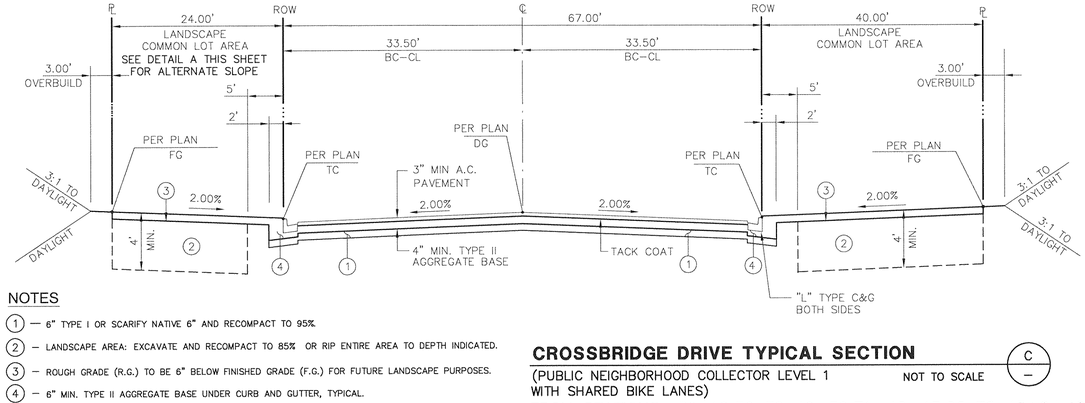
NOTES

1. — 6" TYPE I OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%.
2. — LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR 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.

CROSSBRIDGE DRIVE TYPICAL SECTION

(PUBLIC NEIGHBORHOOD COLLECTOR LEVEL 1 WITH SHARED BIKE LANES) NOT TO SCALE — F / —

FROM STATIONS: 62+00.00 TO 63+89.66



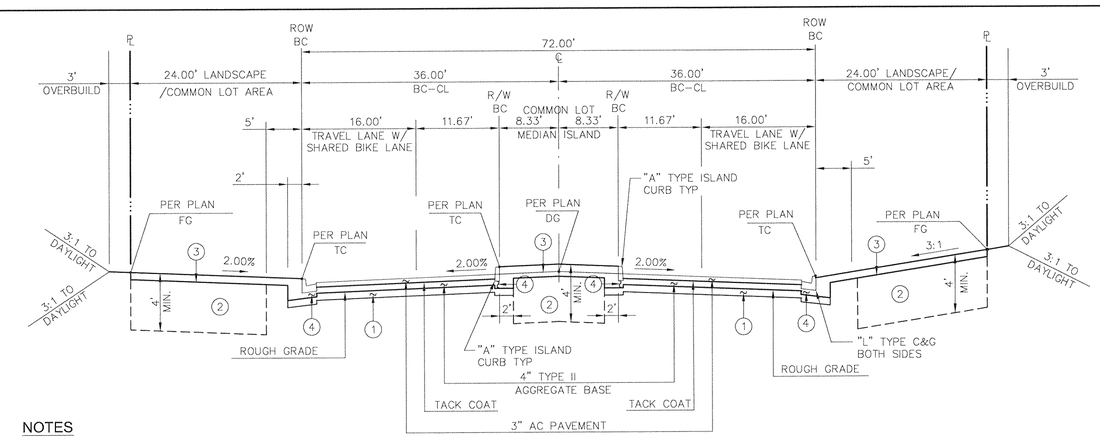
NOTES

1. — 6" TYPE I OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%.
2. — LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR 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.

CROSSBRIDGE DRIVE TYPICAL SECTION

(PUBLIC NEIGHBORHOOD COLLECTOR LEVEL 1 WITH SHARED BIKE LANES) NOT TO SCALE — C / —

FROM STATIONS: 39+16.30 TO 40+30.71, 42+43.00 TO 45+94.49
54+23.63 TO 55+89.86, 57+41.95 TO 58+54.39



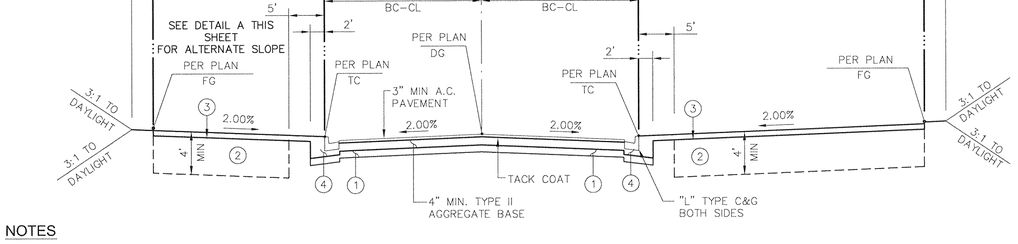
NOTES

1. — 6" TYPE I OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%.
2. — LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR 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.

CROSSBRIDGE DRIVE TYPICAL SECTION

(PUBLIC NEIGHBORHOOD COLLECTOR LEVEL 2 WITH SHARED BIKE LANES) NOT TO SCALE — E / —

FROM STATIONS: 63+89.66 TO 68+00.00



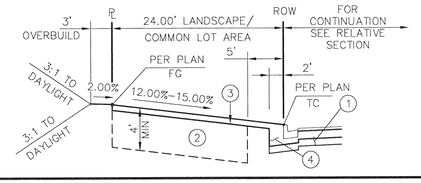
NOTES

1. — 6" TYPE I OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%.
2. — LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR 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.

CROSSBRIDGE DRIVE TYPICAL SECTION

(PUBLIC NEIGHBORHOOD COLLECTOR LEVEL 1 WITH SHARED BIKE LANES) NOT TO SCALE — B / —

FROM STATIONS: 45+94.49 TO 54+23.63



NOTES

1. — 6" TYPE I OR SCARIFY NATIVE 6" AND RECOMPACT TO 95%.
2. — LANDSCAPE AREA: EXCAVATE AND RECOMPACT TO 85% OR 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.

CROSSBRIDGE DRIVE, STA. 42+43 TO 51+00

LANDSCAPE NORTHBOUND NOT TO SCALE — A / —

STATE OF NEVADA — PROFESSIONAL ENGINEER — JOSHUA L. JOHNSON — No. 15784 — CIVIL — DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION
	DATE	AGEN APP
	DATE	GOW APP
	DATE	10/01/2015

PROJECT NO. 62024-222

DESIGN: GOW
DRAWN: JLJ
CHECK: GOW
PLOT DATE: 10-01-15
PLOT TIME: 12:21:01

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD · LAS VEGAS, NV 89146
T: 702.804.2000 · F: 702.804.2299 · GCWALLACE.COM
LAS VEGAS
F:\Projects\60\62024-222\DWG\Production\24GB2c33_DTI.dwg
Paul Bremard

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS

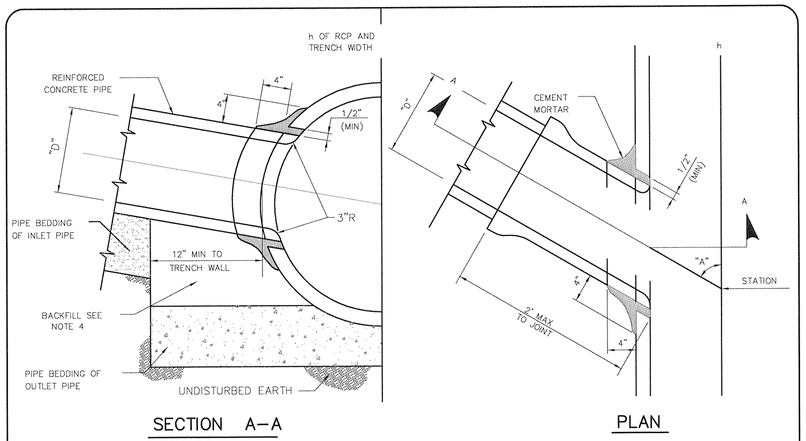
TYPICAL SECTIONS

DRAWING 33

33 OF 53 SHTS

SID NO. 812 PROJECT 2

g:\24-36.dwg 072023.jpv



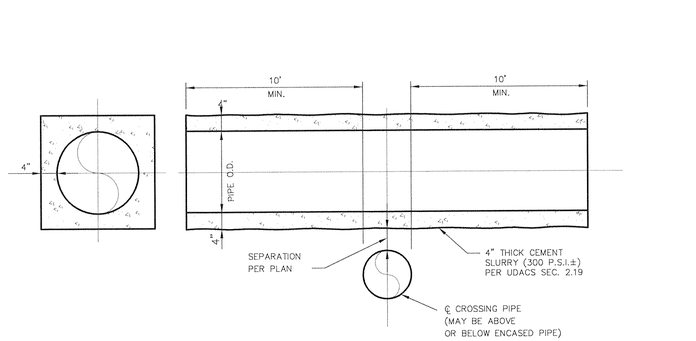
SECTION A–A PLAN

NOTES:

1. ANGLE "A" SHALL BE BETWEEN 45° AND 90° AND "D" SHALL NOT EXCEED 1/2 THE INSIDE DIAMETER OF THE MAIN STORM DRAIN PIPE.
2. THE OPENING INTO THE MAIN STORM DRAIN SHALL BE THE OUTSIDE DIAMETER OF THE INLET PIPE PLUS 1" MIN OR 3" MAX.
3. BURN OR CHIP END OF INLET PIPE FLUSH WITH INNER SURFACE OF MAINLINE PIPE. ROUND EDGES OF MAIN LINE AND INLET PIPE.
4. BACKFILL WITH SLURRY CONTAINING MINIMUM 1 1/2 SACKS P.C./C.Y. SLURRY BACK SHALL NOT EXTEND PAST JOINT LOCATION OF INLET PIPE.

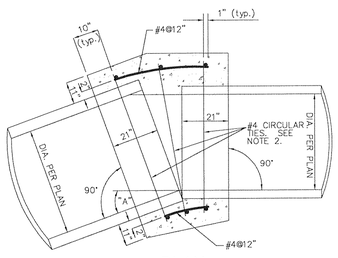
PIPE JUNCTION DETAIL 7 —

NOT TO SCALE



CONCRETE ENCASEMENT DETAIL 6 —

NOT TO SCALE



PLAN

NOTES:

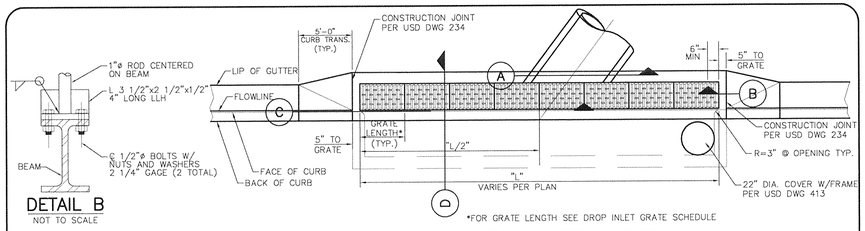
1. WHERE THE SLOPE OF THE UPSTREAM PIPE IS GREATER THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN SOFFITS. WHERE THE SLOPE OF THE UPSTREAM PIPE IS LESS THAN THE SLOPE OF THE DOWNSTREAM PIPE, JOIN INVERTS.
2. WHERE THE SPACE BETWEEN THE PIPE EXTREMITIES EXCEEDS 2 1/2 INCHES, THE NUMBER OF CIRCULAR TIES SHALL BE INCREASED TO MAINTAIN A MAXIMUM SPACING OF 6 INCHES CENTER TO CENTER. CIRCULAR TIES SHALL HAVE A DIAMETER 5 INCHES GREATER THAN THE OUTSIDE DIAMETER OF THE LARGER PIPE.
3. CONTRACTOR TO USE CONCRETE COLLAR WHEN CONNECTING TO AN EXISTING STUB WHERE A FIELD ADJUSTMENT IS NEEDED. ANGLE "A" SHALL NOT EXCEED 45°.

CIRCULAR TIES:

PIPE DIAMETER	SPACE BETWEEN PIPE EXTREMITIES	NO. OF CIRCULAR TIES
21" or less	2 1/2"	3
24" to 30"	2 1/2" or less	3
33" to 57"	2 1/2" or less	4
60" to 66"	2 1/2" or less	5

CONCRETE COLLAR DETAIL 5 —

NOT TO SCALE



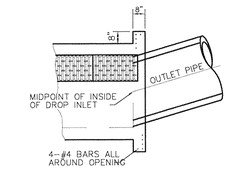
DETAIL B

NOT TO SCALE

*FOR GRATE LENGTH SEE DROP INLET GRATE SCHEDULE

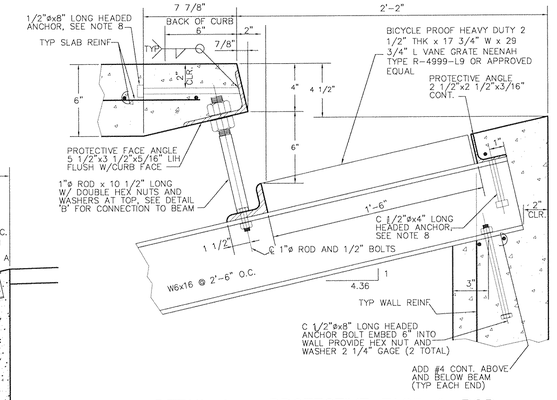
DROP INLET LAYOUT PLAN

NOT TO SCALE



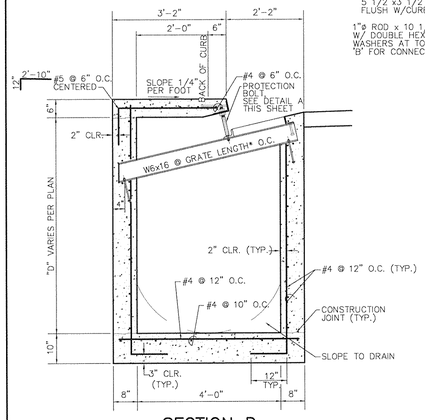
END CONNECTION DETAIL

NOT TO SCALE



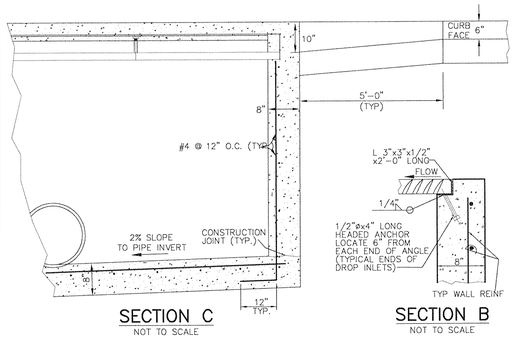
DETAIL A – PROTECTIVE FACE & ROD

NOT TO SCALE



SECTION D

NOT TO SCALE

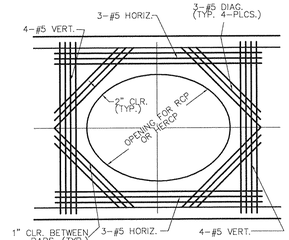


SECTION C

NOT TO SCALE

SECTION B

NOT TO SCALE



SECTION A

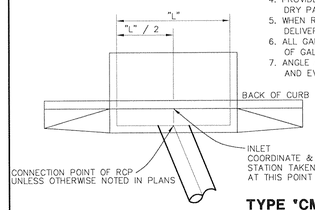
NOT TO SCALE

DROP INLET GRATE SCHEDULE

	STATION/OFFSET	"L"	GRATE LENGTH	NO. OF GRATES
CROSSBRIDGE	35+80.57 33.50' RT	10.0	2.50'	4
	35+83.19 33.50' LT	7.5	2.50'	3
	39+06 33.50' LT	5.0	2.50'	2
	42+11 33.50' RT	5.0	2.50'	2
	42+11 33.50' LT	5.0	2.50'	2
	49+29 22.00' RT	5.0	2.50'	2
	49+33 22.00' LT	5.0	2.50'	2
	57+30, 33.50' RT	7.5	2.50'	3
	57+17, 33.50' LT	7.5	2.50'	3
	62+91, 33.50' RT	10.0	2.50'	4
	62+91, 34.09' LT	10.0	2.50'	4

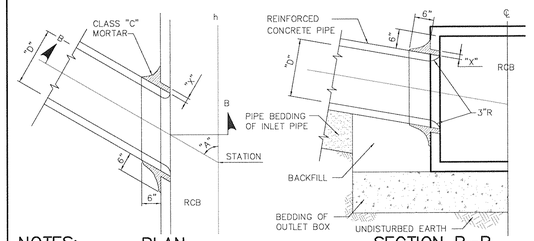
NOTES:

1. CONCRETE SHALL BE CLASS "D" OR "DA".
2. OUTLET PIPE SHALL BE TRIMMED FLUSH WITH INSIDE FACE OF INLET.
3. ALL EXPOSED METALS SHALL BE HOT DIP GALVANIZED AFTER FABRICATION.
4. PROVIDE 1/2" (MIN.) CLEARANCE ALL AROUND THE STEEL BEAM, DRY PACK AFTER INSTALLATION.
5. WHEN REQUIRED BY THE LENGTH OF OPENING, PLATE ANGLE MAY BE DELIVERED IN SECTIONS AND BUTT WELDED IN PLACE.
6. ALL GALVANIZING DAMAGED BY WELDING SHALL RECEIVE TWO COATS OF GALVALLOY OR EQUAL.
7. ANGLE ANCHORS SHALL BE EMBEDDED MIDPOINT IN EACH ENDWALL AND EVENLY SPACED (MAXIMUM SPACING OF 2').



TYPE "CM2" DROP INLET 4 —

NOT TO SCALE NOT TO SCALE



NOTES:

1. ANGLE "A" SHALL BE BETWEEN 60°.
2. DIMENSION "D" SHALL BE EQUAL TO OR LESS THAN 1/2 THE INSIDE DIMENSION OF THE MAINLINE BOX.

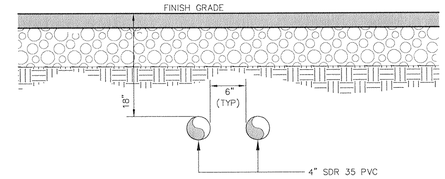
PLAN

3. DIMENSION "X" SHALL BE 1" MINIMUM AND 3" MAXIMUM.
4. BURN OR CHIP END OF INLET PIPE FLUSH WITH INNER SURFACE OF MAINLINE. ROUND EDGES OF MAINLINE AND INLET PIPE.

SECTION B–B

BOX PENETRATION DETAIL 8 —

NOT TO SCALE

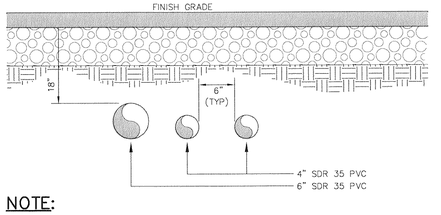


NOTE:

CONTRACTOR TO EXTEND SLEEVES 1' (12") BEHIND BACK OF CURB, TYP.

IRRIGATION SLEEVE 2 —

BANK "B" NOT TO SCALE



NOTE:

CONTRACTOR TO EXTEND SLEEVES 1' (12") BEHIND BACK OF CURB, TYP.

IRRIGATION SLEEVE 1 —

BANK "A" NOT TO SCALE

TDS UPDATE – 10/01/2015 – NOT FOR CONSTRUCTION

ENGINEER – STATE OF NEVADA – JOSHUA L. JOHNSON – No. 15787 – PROFESSIONAL – DATE 10/8/2015 – CIVIL

REV	DATE	DESCRIPTION	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62024-222

DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 12:21:15

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS
F:\Projects\600\62024-222\DWG\Production\24CB2c34_DT2.dwg
Paul Bremerd

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS

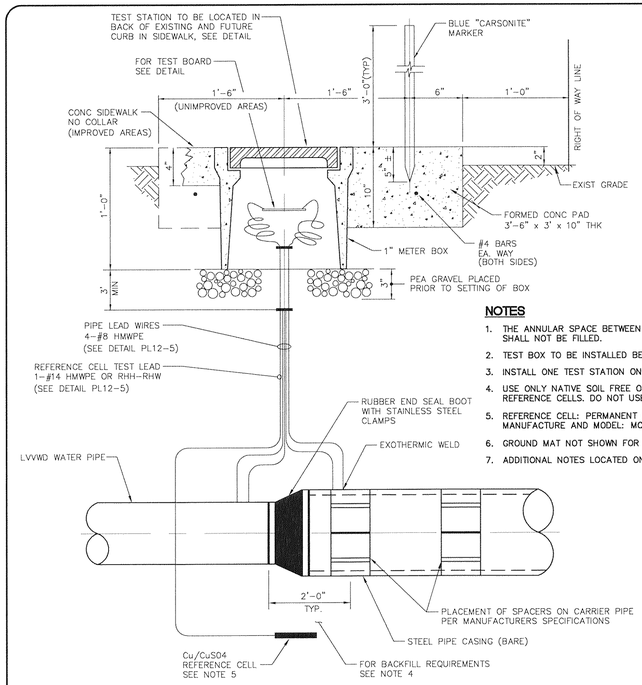
UTILITY DETAILS 1

DRAWING 34

34 OF 53 SHTS

SID NO. 812 PROJECT 2

gca2436.dwg 070203.jpv

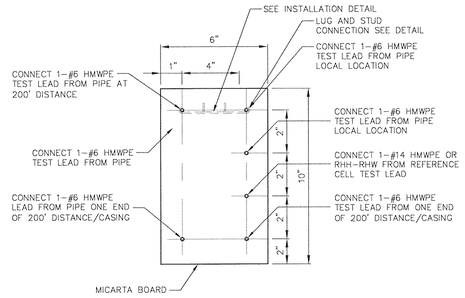


NOTES

1. THE ANNULAR SPACE BETWEEN THE CARRIER PIPE AND THE CASING SHALL NOT BE FILLED.
2. TEST BOX TO BE INSTALLED BEHIND CURB AND OUT OF TRAFFIC LANES.
3. INSTALL ONE TEST STATION ON EACH END OF CASING.
4. USE ONLY NATIVE SOIL FREE OF ROCKS AND CLODS FOR BACKFILL AROUND REFERENCE CELLS. DO NOT USE CLSM OR SAND AS BACKFILL.
5. REFERENCE CELL: PERMANENT COPPER/COPPER SULFATE ELECTRODE. MANUFACTURE AND MODEL: MCMILLER ACCUREF 20 OR EQUAL.
6. GROUND MAT NOT SHOWN FOR CLARITY, (NOT REQUIRED)
7. ADDITIONAL NOTES LOCATED ON CATHODIC PROTECTION GENERAL NOTES.

TEST STATION - CASING
NOT TO SCALE

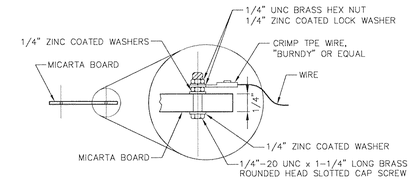
TEST STATION CASING AND BOARD DETAIL (6)
NOT TO SCALE



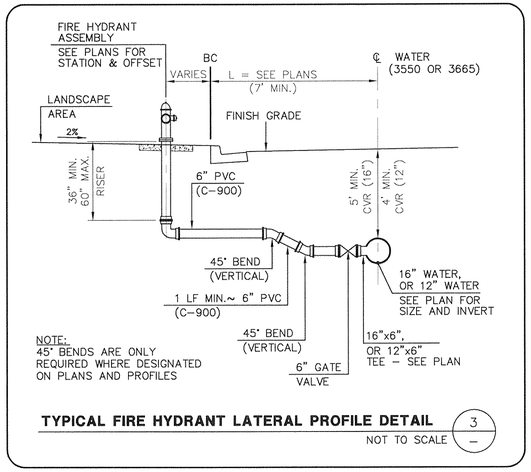
NOTES

SEE GENERAL CATHODIC PROTECTION GENERAL NOTES.

TYPICAL TEST BOARD DETAIL - PIPELINE CURRENT MEASUREMENTS
NOT TO SCALE

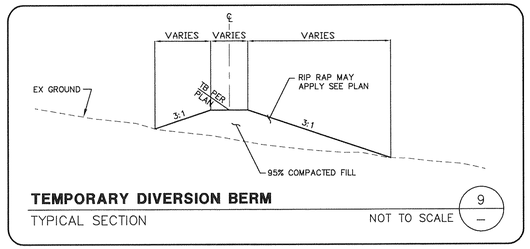


TEST LUG AND STUD CONNECTION
NOT TO SCALE

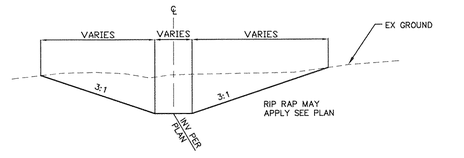


NOTE:
45° BENDS ARE ONLY REQUIRED WHERE DESIGNATED ON PLANS AND PROFILES

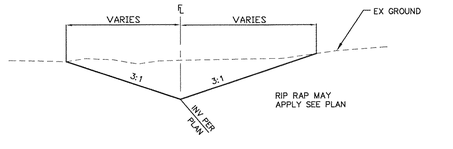
TYPICAL FIRE HYDRANT LATERAL PROFILE DETAIL (3)
NOT TO SCALE



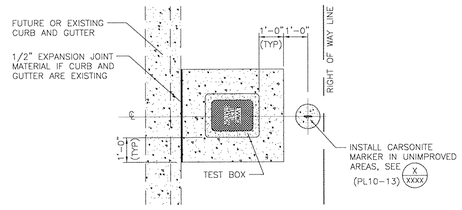
TEMPORARY DIVERSION BERM (9)
TYPICAL SECTION — NOT TO SCALE



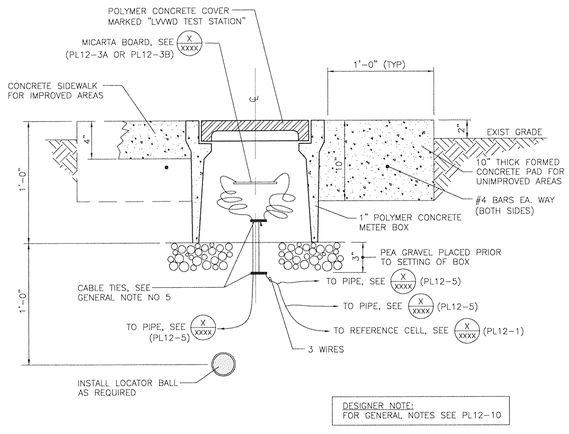
TEMPORARY TRAPEZOIDAL DITCH (8)
TYPICAL SECTION — NOT TO SCALE



TEMPORARY "V" DITCH (7)
TYPICAL SECTION — NOT TO SCALE



PLAN VIEW



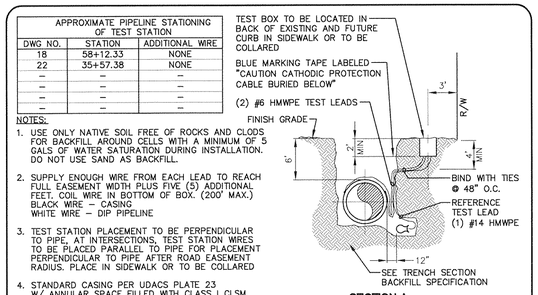
DESIGNER NOTE:
FOR GENERAL NOTES SEE PL12-10

TEST BOX DETAIL - TYPICAL (5)
NOT TO SCALE PL12-2 090808

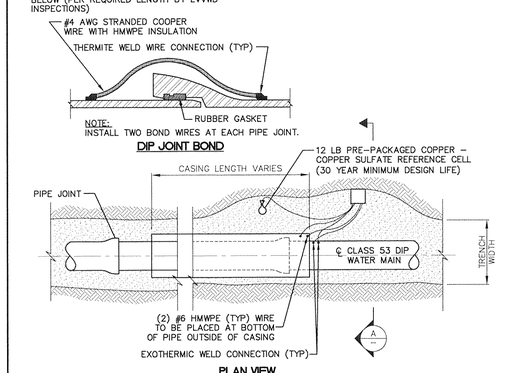
APPROXIMATE PIPELINE STATIONING OF TEST STATION		
DWG NO.	STATION	ADDITIONAL WIRE
18	58+12.33	NONE
22	35+57.38	NONE
–	–	–
–	–	–
–	–	–
–	–	–

NOTES:

1. USE ONLY NATIVE SOIL FREE OF ROCKS AND CLODS FOR BACKFILL AROUND CELLS WITH A MINIMUM OF 5 GALS OF WATER SATURATION DURING INSTALLATION. DO NOT USE SAND AS BACKFILL.
2. SUPPLY ENOUGH WIRE FROM EACH LEAD TO REACH FULL EASEMENT WIDTH PLUS FIVE (5) ADDITIONAL FEET. COIL WIRE IN BOTTOM OF BOX. (200' MAX.) BLACK WIRE – CASING WHITE WIRE – DIP PIPELINE
3. TEST STATION PLACEMENT TO BE PERPENDICULAR TO PIPE, AT INTERSECTIONS. TEST STATION WIRES TO BE PLACED PARALLEL TO PIPE FOR PLACEMENT PERPENDICULAR TO PIPE AFTER ROAD EASEMENT RADIUS. PLACE IN SIDEWALK OR TO BE COLLARED
4. STANDARD CASING PER UDACS PLATE 23 W/ ANNULAR SPACE FILLED WITH CLASS I CLSM PIPE TO BE TYPE 53 DIP RESTRAINED FULL LENGTH, AND DOUBLE WRAPPED
5. DIP PIPE JOINT BONDING PER DETAIL PL12-9 AND BELOW (PER REQUIRED LENGTH BY LVVWD INSPECTIONS)

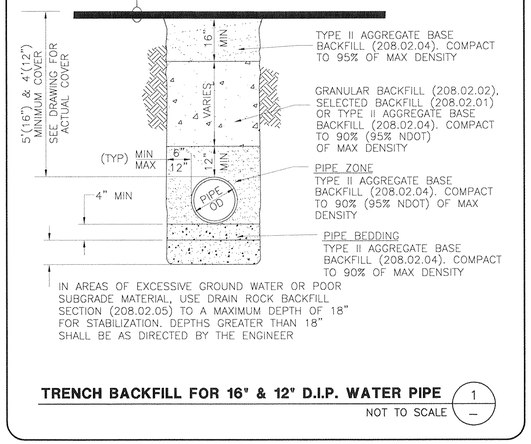


SECTION A



PLAN VIEW

EASEMENT / COMMON ELEMENT DETAIL TYPE 'C' TEST STATION WITHOUT ANODES (4)
NOT TO SCALE



IN AREAS OF EXCESSIVE GROUND WATER OR POOR SUBGRADE MATERIAL, USE DRAIN ROCK BACKFILL SECTION (208.02.05) TO A MAXIMUM DEPTH OF 18" FOR STABILIZATION. DEPTHS GREATER THAN 18" SHALL BE AS DIRECTED BY THE ENGINEER

TRENCH BACKFILL FOR 16" & 12" D.I.P. WATER PIPE (1)
NOT TO SCALE

APPROVED FOR CONSTRUCTION

LAS VEGAS VALLEY WATER DISTRICT ENGINEERING SERVICES MANAGER
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA - JOSHUA L. JOHNSON - No. 15704 - PROFESSIONAL - 10/01/2015

REV	DESCRIPTION	DATE	AGEN APP	DATE	GOW APP	DATE

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJ
PLOT DATE: 10-01-15
PLOT TIME: 12:21:51

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS
F:\Projects\600\62024-222\DWG\Production\V24CB2c35_D13.dwg
Paul Brennard

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS

UTILITY DETAILS 2

DRAWING 35
35 OF 53 SHTS

SID NO. 812 PROJECT 2

95x24.36.dwg 070203.jpg

HANDICAP RAMP #2
SUNCREEK & CROSSBRIDGE DR. HORZ. 1" = 10 (2 / –)
@ STA. 36+15.09

HANDICAP RAMP #1
SUNCREEK & CROSSBRIDGE DR. HORZ. 1" = 10 (1 / –)
@ STA. 36+71.20

NOTE

THIS SET OF DRAWINGS IS BASED UPON NAVD 88 DATUM. PREVIOUS DRAWINGS MAY BE BASED ON OTHER DATUM. CARE SHOULD BE OBSERVED WHEN UTILIZING THIS SET OF DRAWINGS

BASIS OF BEARINGS

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

BM #	DESCRIPTION	NAVD 88 DATUM	NAVD 88 DATUM
CLV BM No. D368	U.S.C. & G.S. DISC SET IN ROCK RIDGE 150' SOUTH OF CHARLESTON BLVD & WEST OF DETENTION BASIN.	3246.63 (FEET)	989.574 (METERS)

10 0 10 20
SCALE FEET

Call before you Dig
Avoid cutting underground utility lines. It's costly.
Call 811
or
1-800-227-2600
and
CLARK COUNTY TRAFFIC OPERATIONS
1-702-455-6000

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

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

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
Exp. 06/30/2017
PROFESSIONAL
No. 15769
CIVIL
DATE: 10/01/2015

REV	DATE	DESCRIPTION
		TDS UPDATE – 10/01/2015 – NOT FOR CONSTRUCTION

	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-01-15
PLOT TIME: 12:22:34

G. C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
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LAS VEGAS
F:\Projects\600\62024-222\DWG\Production\24x28x36_D14.dwg
Paul Bremard

THE HOWARD HUGHES COMPANY, LLC

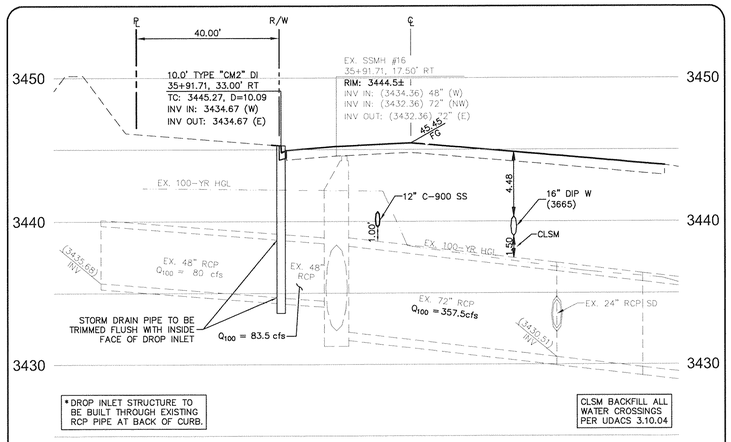
VILLAGE 24 – CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

CONSTRUCTION DETAILS

DRAWING
36
36 OF 53 SHTS

SID NO. 812 PROJECT 2

gc+24x36.dwg 070203.plt

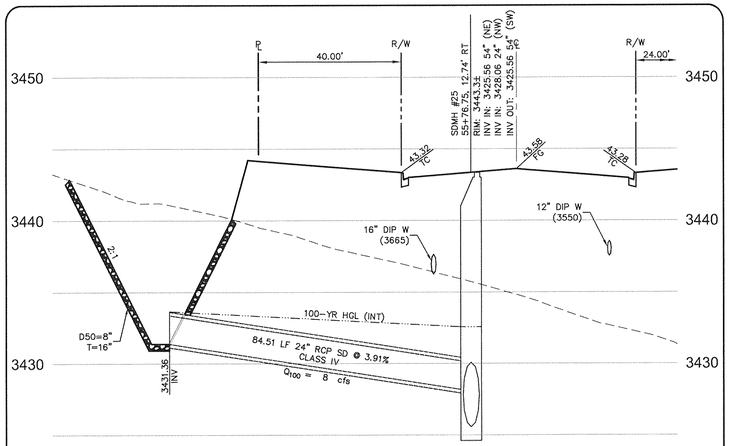


EX. 48" STORM DRAIN & DI

CROSSBRIDGE DRIVE
@ STA: 36+03.18

HORZ. 1" = 20
VERT. 1" = 5

8 / –

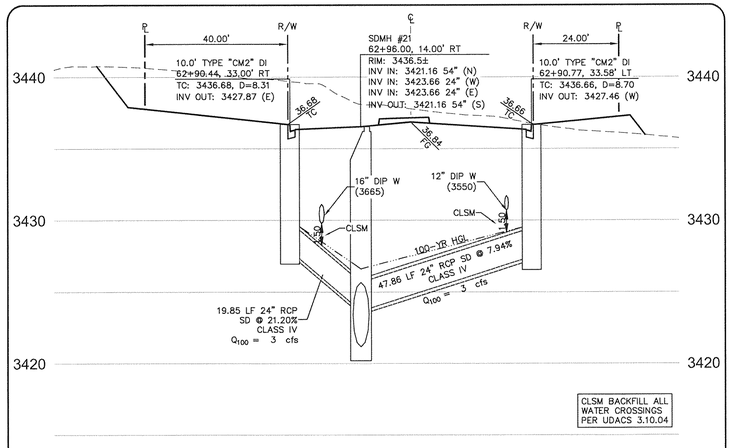


24" STORM DRAIN LINE (INTERIM)

CROSSBRIDGE DRIVE
@ STA: 55+77.17

HORZ. 1" = 20
VERT. 1" = 5

5 / –

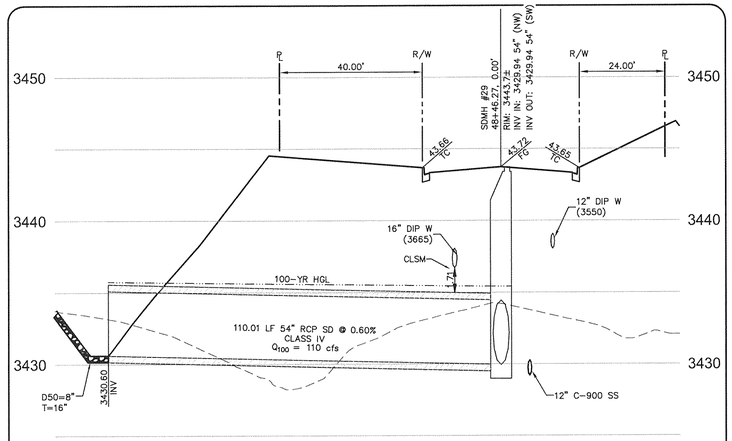


24" STORM DRAIN & DI

CROSSBRIDGE DRIVE
@ STA: 62+94.54

HORZ. 1" = 20
VERT. 1" = 5

2 / –

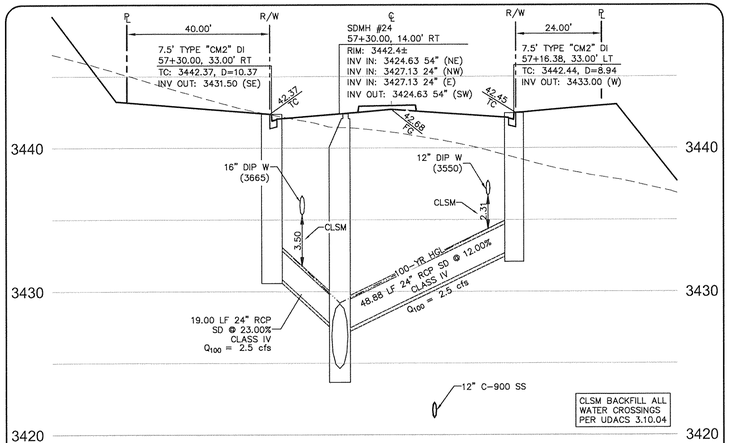


54" STORM DRAIN MAIN (INLET)

CROSSBRIDGE DRIVE
@ STA: 48+46.27

HORZ. 1" = 20
VERT. 1" = 5

7 / –

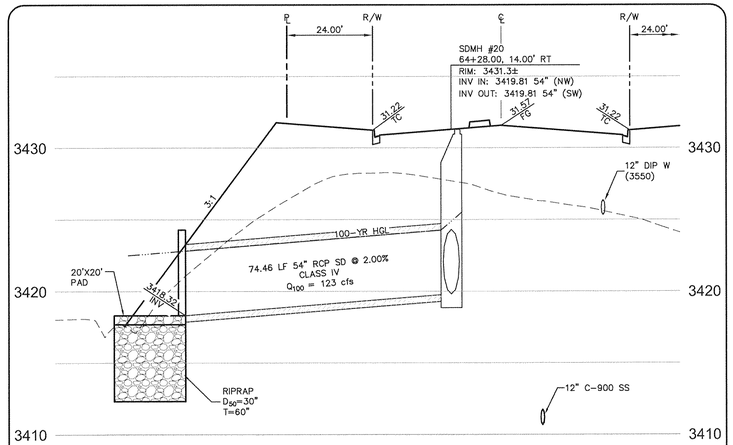


24" STORM DRAIN & DI

CROSSBRIDGE DRIVE
@ STA: 57+26.15

HORZ. 1" = 20
VERT. 1" = 5

4 / –

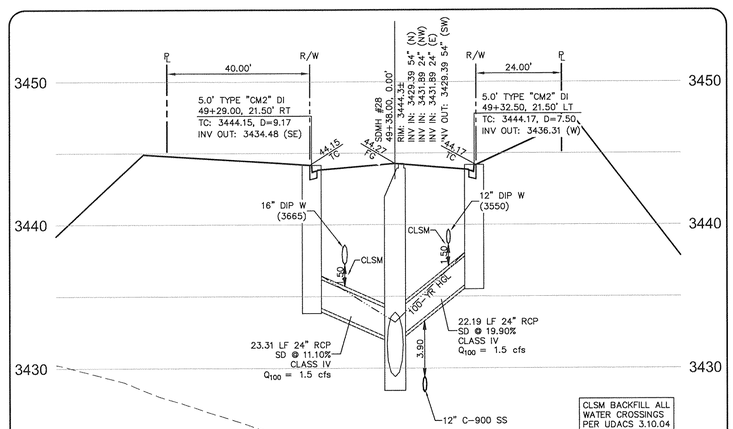


54" STORM DRAIN (OUTFALL)

CROSSBRIDGE DRIVE
@ STA: 64+28.00

HORZ. 1" = 20
VERT. 1" = 5

1 / –

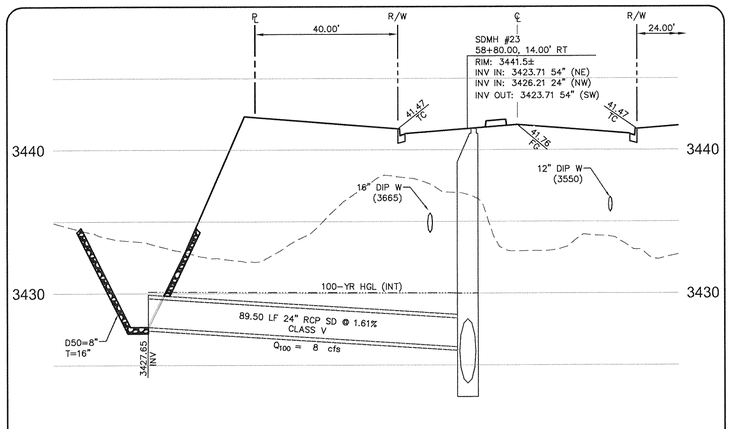


24" STORM DRAIN & DI

CROSSBRIDGE DRIVE
@ STA: 49+39.00

HORZ. 1" = 20
VERT. 1" = 5

6 / –



24" STORM DRAIN LINE (INTERIM)

CROSSBRIDGE DRIVE
@ STA: 58+80.00

HORZ. 1" = 20
VERT. 1" = 5

3 / –

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
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15786
PROFESSIONAL
civil
DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: JLJ
CHECK: GCW
PLOT DATE: 10-01-15
PLOT TIME: 12:23:35

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 F: 702.804.2099 GCWALLACE.COM
LAS VEGAS

F:\Projects\600\62024-222\VWG\Production\24222637_LAT1.dwg
Paul Bremland

THE HOWARD HUGHES COMPANY, LLC

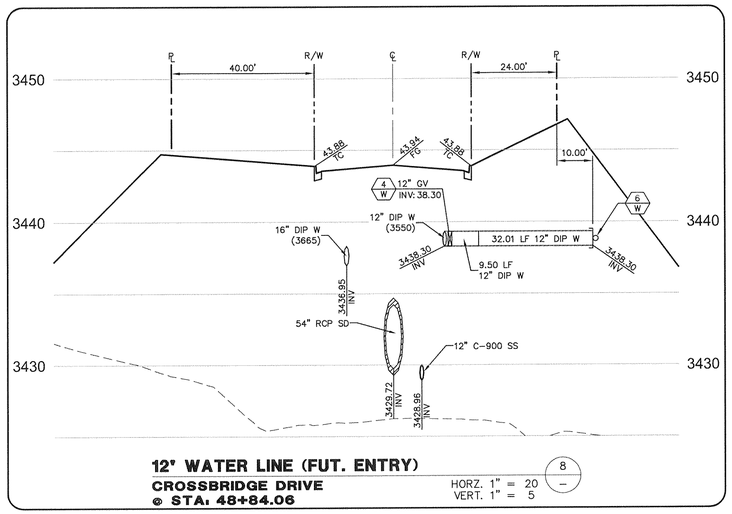
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

LATERAL DETAILS 1

DRAWING
37
37 OF 53 SHTS

SID NO. 812 PROJECT 2

s=24.36,4=s970203.dv

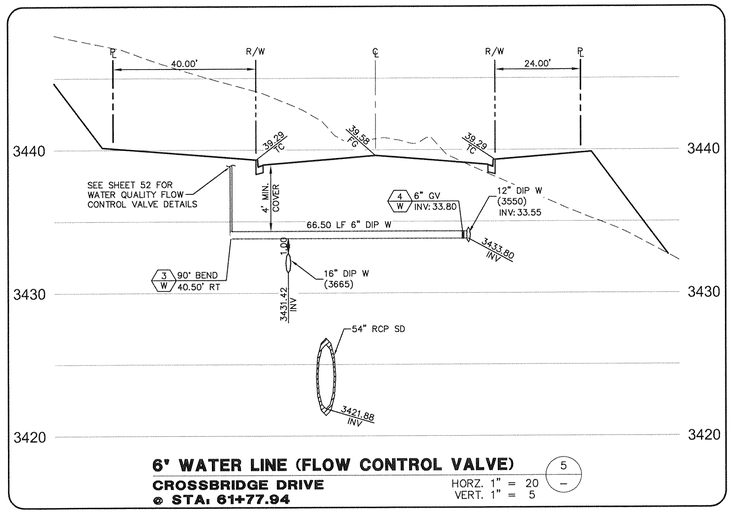


12" WATER LINE (FUT. ENTRY)

CROSSBRIDGE DRIVE
@ STA: 48+84.06

HORZ. 1" = 20
VERT. 1" = 5

8 / –

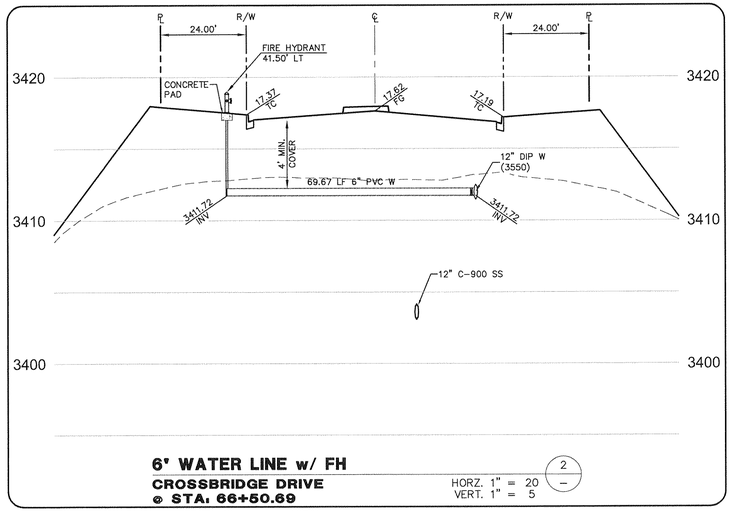


6" WATER LINE (FLOW CONTROL VALVE)

CROSSBRIDGE DRIVE
@ STA: 61+77.94

HORZ. 1" = 20
VERT. 1" = 5

5 / –

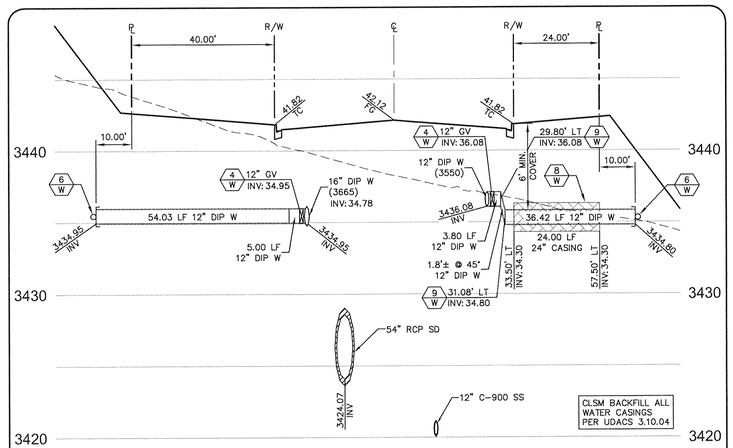


6" WATER LINE w/ FH

CROSSBRIDGE DRIVE
@ STA: 66+50.69

HORZ. 1" = 20
VERT. 1" = 5

2 / –

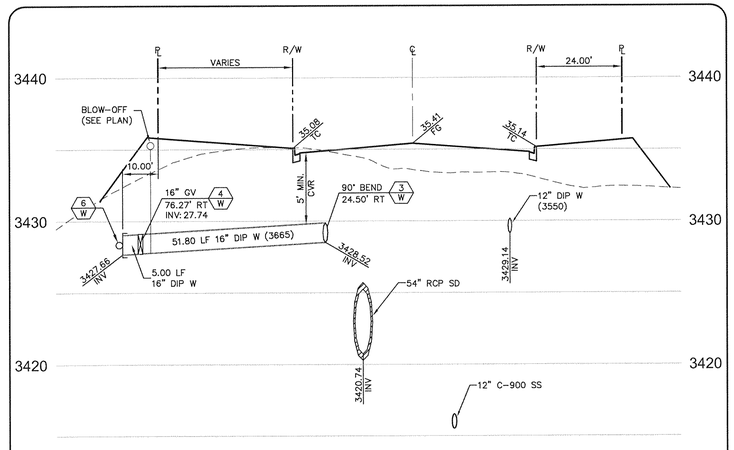


12" WATER LINE (2) (FUT. ENTRY)

CROSSBRIDGE DRIVE
@ STA: 58+19.15

HORZ. 1" = 20
VERT. 1" = 5

7 / –

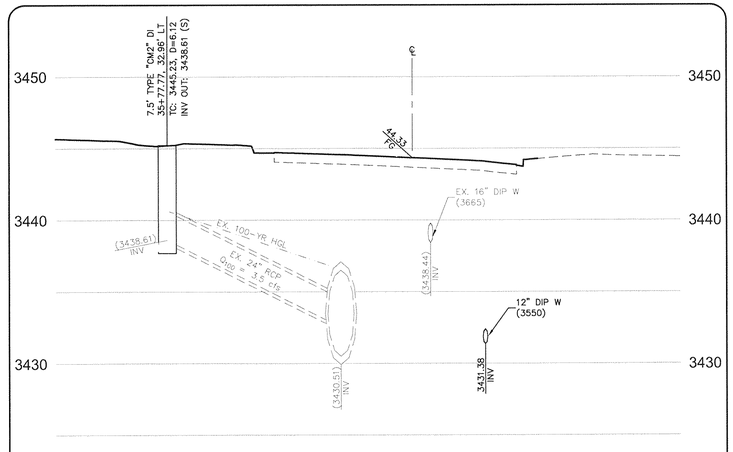


16" WATER MAIN (FUT. ENTRY)

CROSSBRIDGE DRIVE
@ STA: 63+37.00

HORZ. 1" = 20
VERT. 1" = 5

4 / –

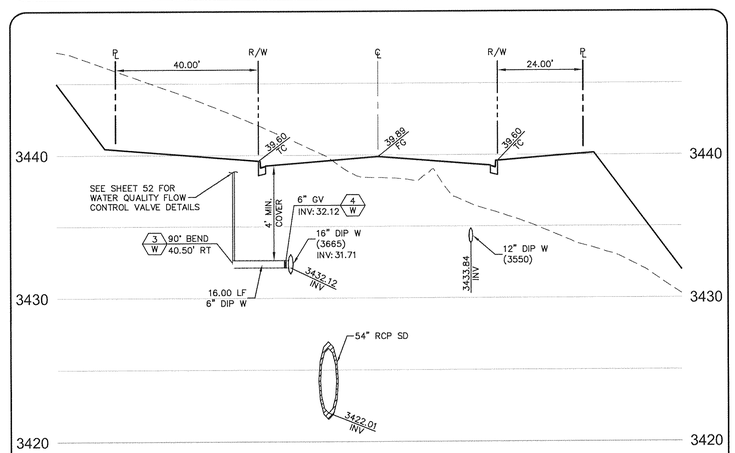


EX. 24" STORM DRAIN & DI

SUNCREEK ROAD
@ STA: 10+36.54 (= 36+43.14)

HORZ. 1" = 20
VERT. 1" = 5

1 / –

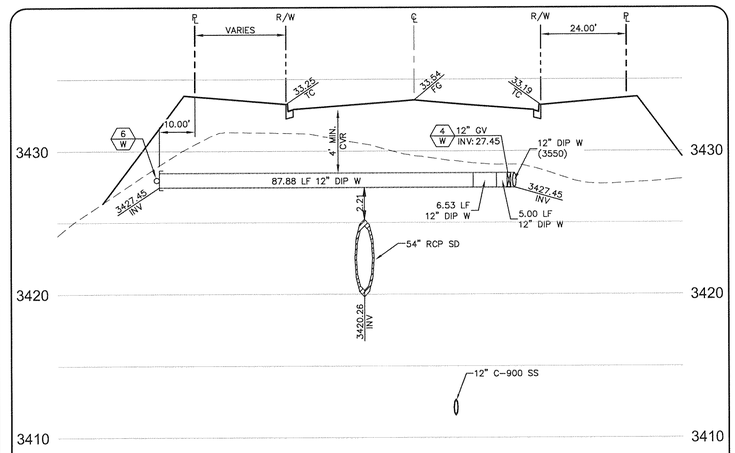


6" WATER LINE (FLOW CONTROL VALVE)

CROSSBRIDGE DRIVE
@ STA: 61+57.18

HORZ. 1" = 20
VERT. 1" = 5

6 / –



12" WATER LINE (FUT. ENTRY)

CROSSBRIDGE DRIVE
@ STA: 63+84.51

HORZ. 1" = 20
VERT. 1" = 5

3 / –

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
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA
JOSHUA L. JOHNSON
No. 15787
PROFESSIONAL
CIVIL
DATE: 10/01/2015

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

PROJECT NO. 62024-222

DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-01-15
PLOT TIME: 12:24:41

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 F: 702.804.2299 GCWALLACE.COM
LAS VEGAS

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Paul Bremard

THE HOWARD HUGHES COMPANY, LLC

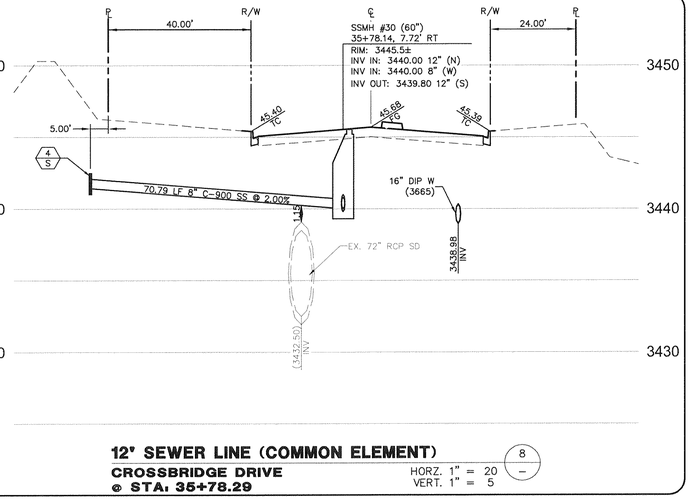
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

LATERAL DETAILS 2

DRAWING
38
38 OF 53 SHTS

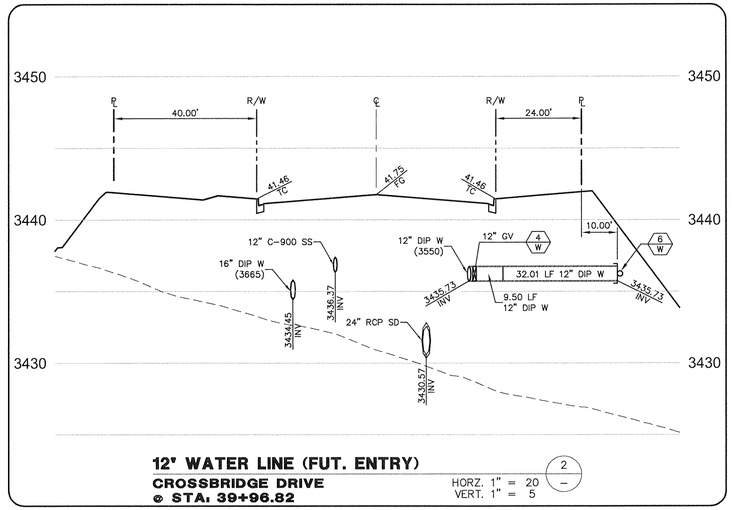
SID NO. 812 PROJECT 2

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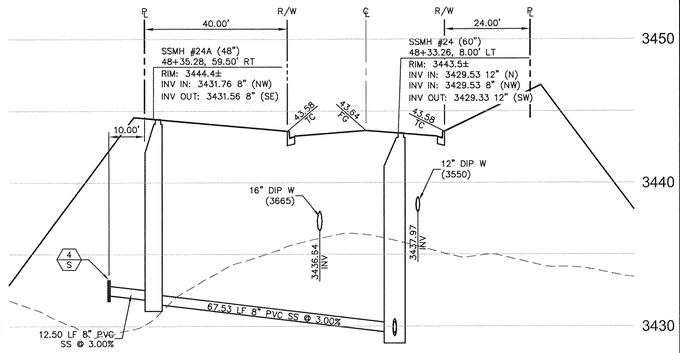


12" SEWER LINE (COMMON ELEMENT)
CROSSBRIDGE DRIVE
@ STA: 35+78.29
HORZ. 1" = 20
VERT. 1" = 5
8 / –

THIS AREA INTENTIONALLY LEFT BLANK

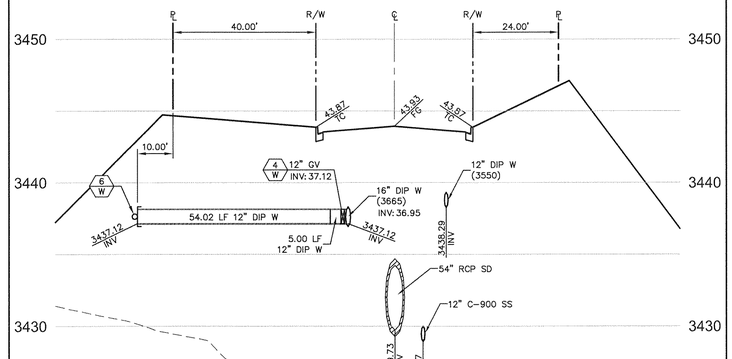


12" WATER LINE (FUT. ENTRY)
CROSSBRIDGE DRIVE
@ STA: 39+96.82
HORZ. 1" = 20
VERT. 1" = 5
2 / –

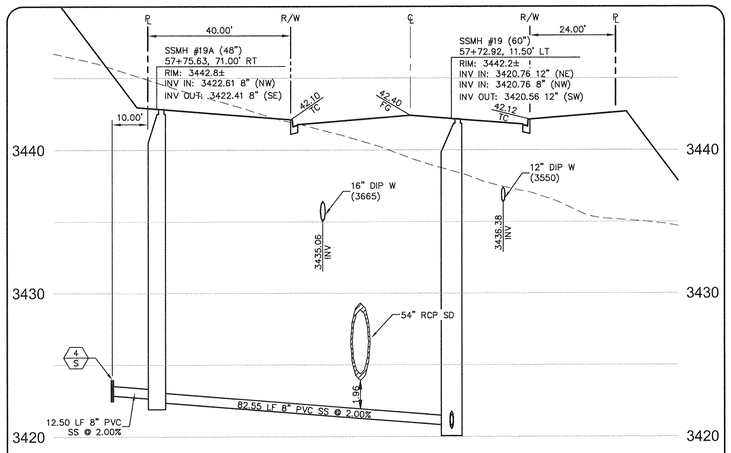


12" SEWER LINE (FUT. ENTRY)
CROSSBRIDGE DRIVE
@ STA: 48+33.52
HORZ. 1" = 20
VERT. 1" = 5
7 / –

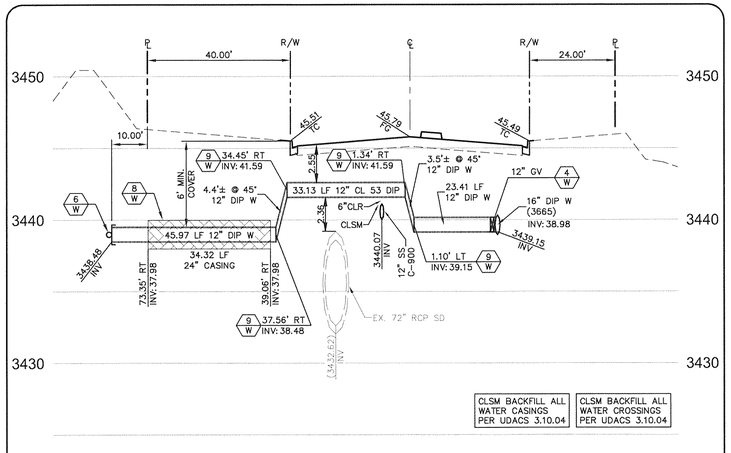
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12" WATER LINE (FUT. ENTRY)
CROSSBRIDGE DRIVE
@ STA: 48+79.88
HORZ. 1" = 20
VERT. 1" = 5
1 / –



12" SEWER LINE (FUT. ENTRY)
CROSSBRIDGE DRIVE
@ STA: 57+73.34
HORZ. 1" = 20
VERT. 1" = 5
6 / –



12" WATER LINE (COMMON ELEMENT)
CROSSBRIDGE DRIVE
@ STA: 35+67.29
HORZ. 1" = 20
VERT. 1" = 5
3 / –

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
PROJECT NO. 123547 DATE:

ENGINEER - STATE OF NEVADA
JOSHUA J. JOHNSON
No. 15769
PROFESSIONAL
DATE: 10/01/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JJJ
PLOT DATE: 10-01-15
PLOT TIME: 12:27:23

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD - LAS VEGAS, NV 89146
T: 702.804.2000 F: 702.804.2299 GCWALLACE.COM
LAS VEGAS

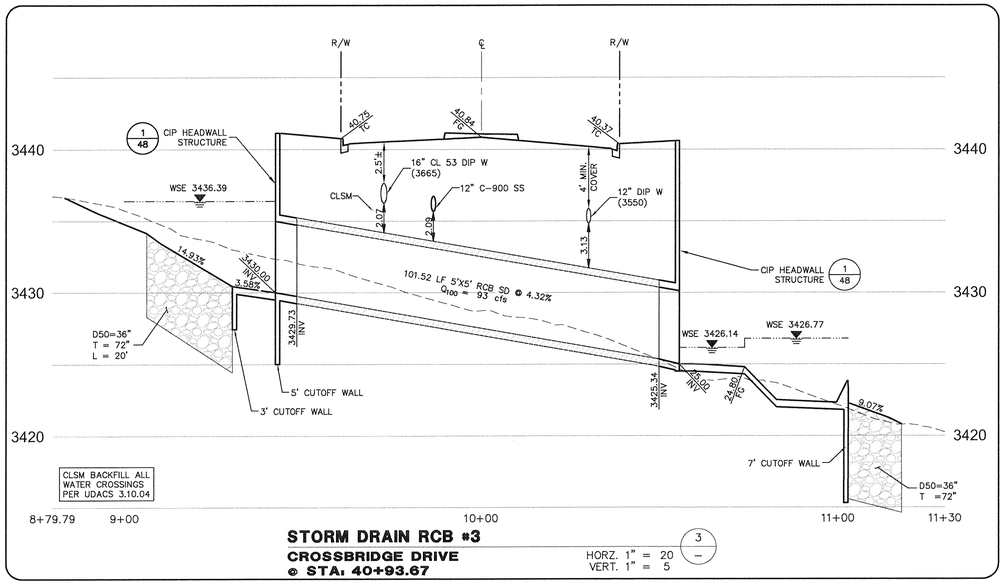
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Paul Bremond

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS
LATERAL DETAILS 3

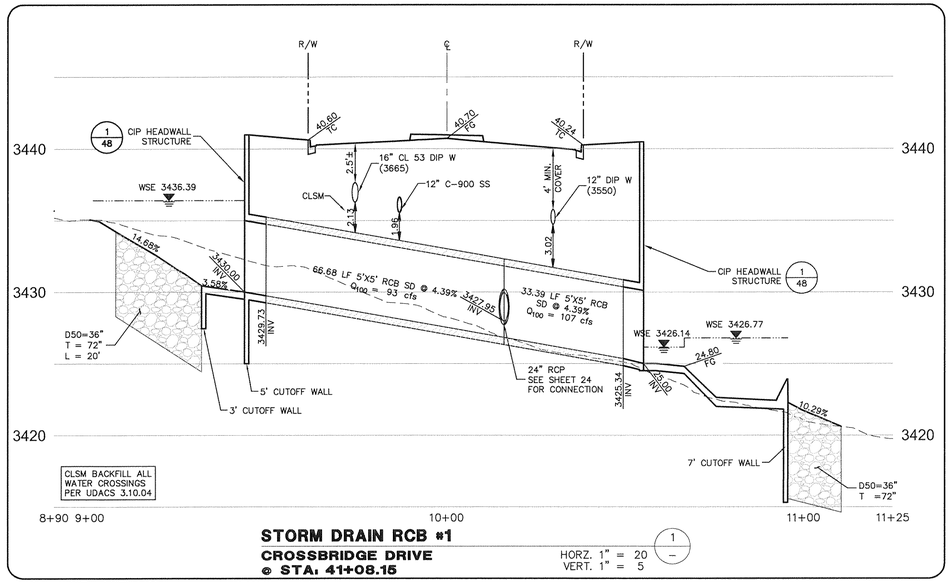
DRAWING 39
39 OF 53 SHTS

SID NO. 812 PROJECT 2

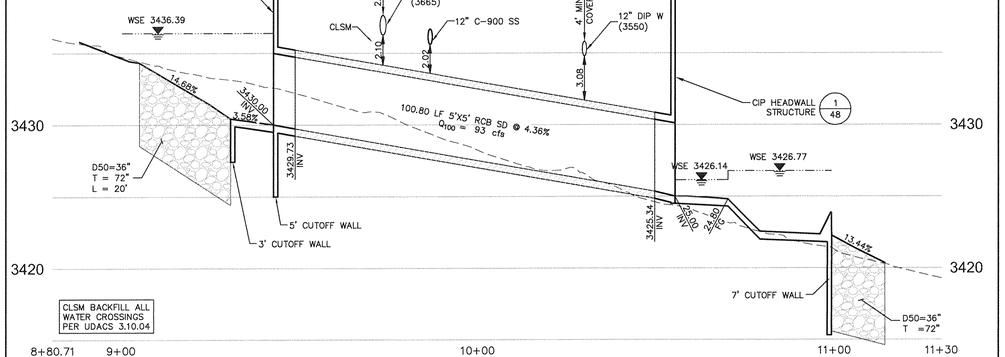
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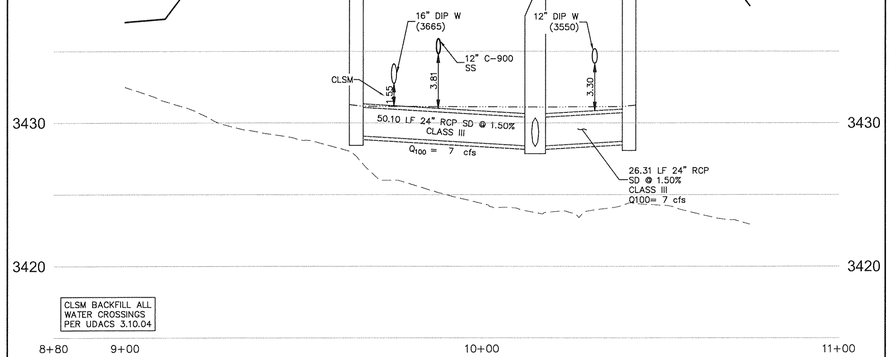
STORM DRAIN RCB #3
CROSSBRIDGE DRIVE
@ STA: 40+93.67
HORZ. 1" = 20
VERT. 1" = 5
3 / —



STORM DRAIN RCB #1
CROSSBRIDGE DRIVE
@ STA: 41+08.15
HORZ. 1" = 20
VERT. 1" = 5
1 / —



STORM DRAIN RCB #2
CROSSBRIDGE DRIVE
@ STA: 41+00.93
HORZ. 1" = 20
VERT. 1" = 5
2 / —



24" STORM DRAIN & DI
CROSSBRIDGE DRIVE
@ STA: 42+11.00
HORZ. 1" = 20
VERT. 1" = 5
A1 / —

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
PROJECT NO. 123547 DATE:

STATE OF NEVADA — PROFESSIONAL ENGINEER — JOSHUA L. JOHNSON — No. 15708 — CIVIL — Exp. 06/30/2017
DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: J.J
PLOT DATE: 10-08-15
PLOT TIME: 10:59:56

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 RAINBOW BLVD. LAS VEGAS, NV 89146
GCWALLACE.COM
T: 702.804.2000 F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS

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Luis Ojeda

THE HOWARD HUGHES COMPANY, LLC

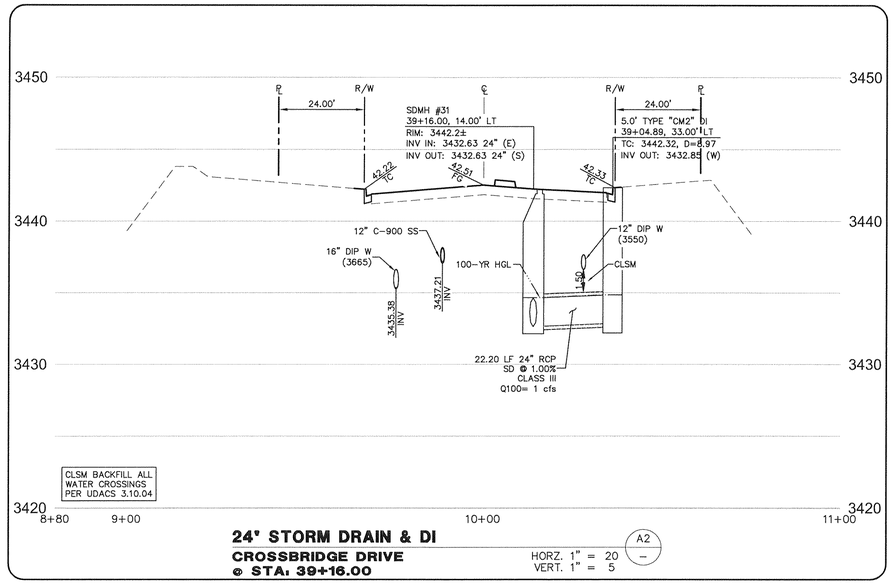
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

OFFSITE GRADING AND CROSSBRIDGE DRIVE
DRAINAGE CORRIDOR CROSSING DETAILS 1

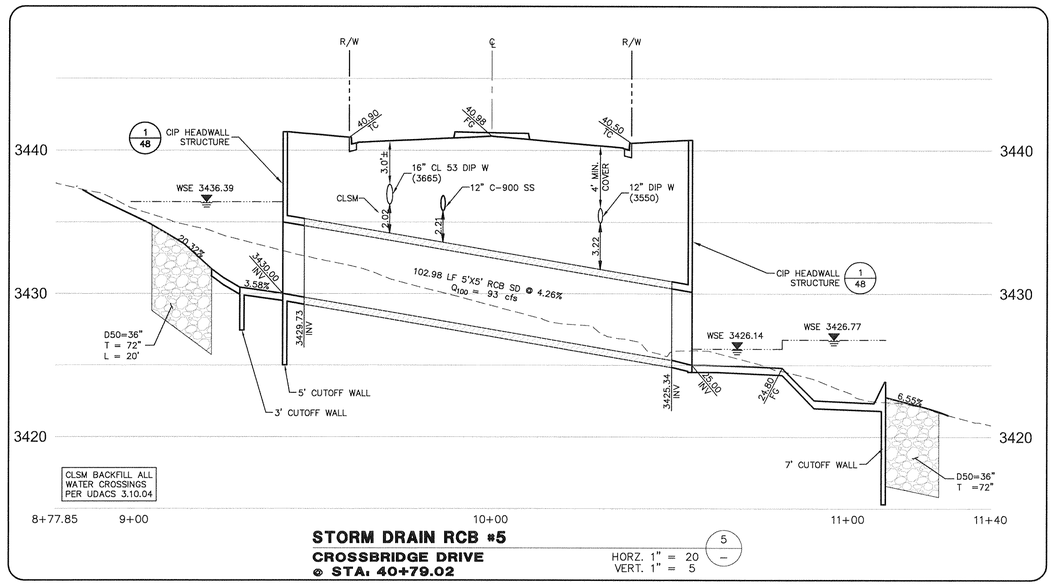
DRAWING 40
40 OF 53 SHTS

SID NO. 812 PROJECT 2

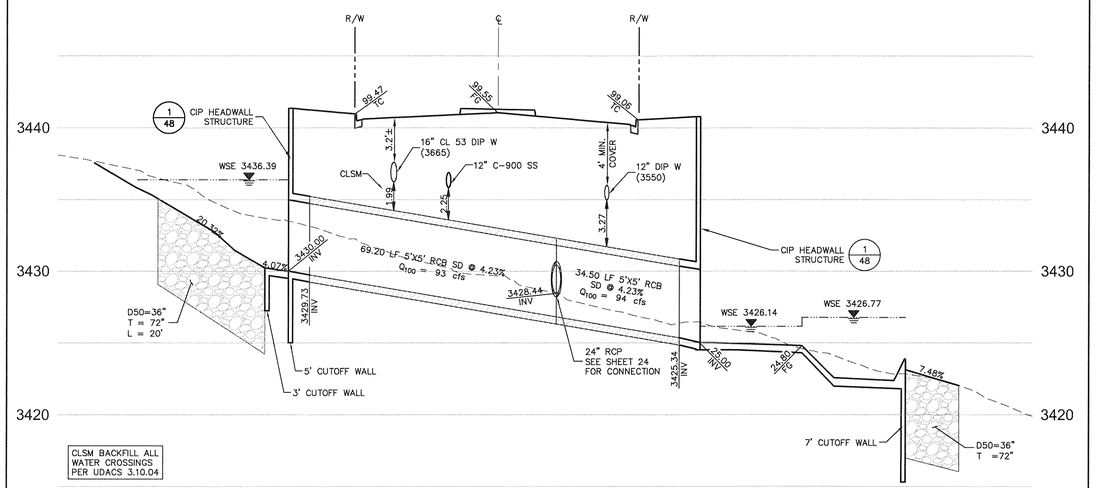
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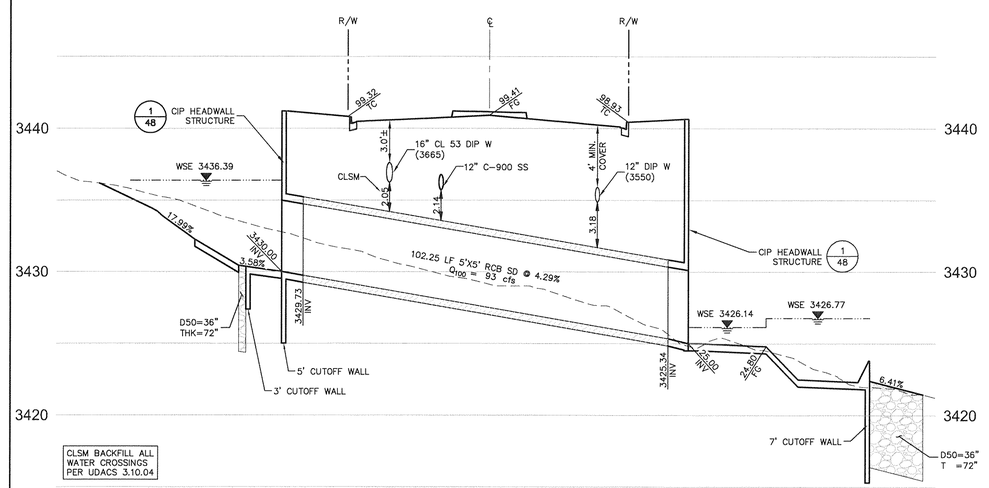
24' STORM DRAIN & DI
CROSSBRIDGE DRIVE
@ STA: 39+16.00
HORZ. 1" = 20
VERT. 1" = 5
A2 / –



STORM DRAIN RCB #5
CROSSBRIDGE DRIVE
@ STA: 40+79.02
HORZ. 1" = 20
VERT. 1" = 5
5 / –



STROM DRAIN RCB #6
CROSSBRIDGE DRIVE
@ STA: 40+71.62
HORZ. 1" = 20
VERT. 1" = 5
6 / –



STORM DRAIN RCB #4
CROSSBRIDGE DRIVE
@ STA: 40+86.37
HORZ. 1" = 20
VERT. 1" = 5
4 / –

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
PROJECT NO. 123547 DATE:

ENGINEER: STATE OF NEVADA - 21879 - JOSHUA L. JOHNSON - PROFESSIONAL ENGINEER - CIVIL - DATE: 10/06/2015

REV	DATE	DESCRIPTION	AGEN. APP	DATE	GCW APP	DATE

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 10:59:29

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
6555 S. JONES BLVD. LAS VEGAS, NEVADA 89118
T: 702.804.2000 F: 702.804.2299 GCWALLACE.COM
LAS VEGAS

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Layer: Grade

THE HOWARD HUGHES COMPANY, LLC

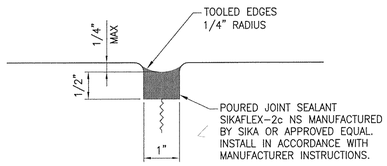
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

OFFSITE GRADING AND CROSSBRIDGE DRIVE
DRAINAGE CORRIDOR CROSSING DETAILS 2

SID NO. 812 PROJECT 2

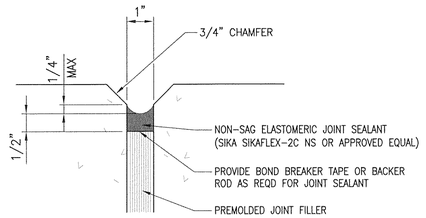
DRAWING
41
41 OF 53 SHTS

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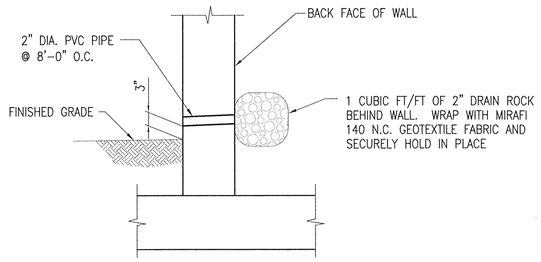


NOTE:
JOINT MUST BE TOOLED, SAW-CUTTING IS NOT ALLOWED.

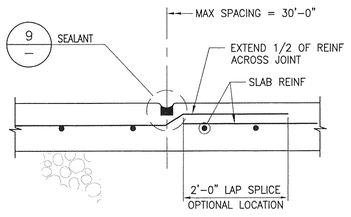
9 SEALANT DETAIL
SCALE: NTS



6 JOINT SEALANT DETAIL
SCALE: NTS

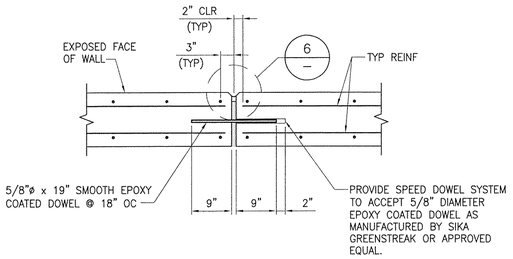


3 WEEPHOLE DETAIL
SCALE: NTS

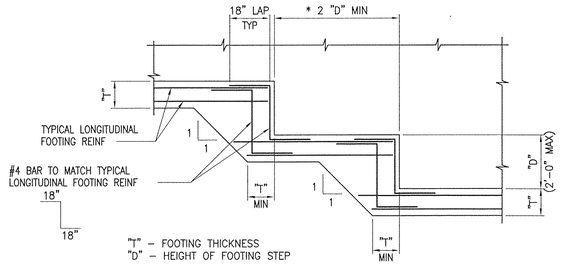


NOTE:
SPRAY GALVANIZE REINFORCING BARS 9" EACH SIDE OF WEAKENED PLANE JOINT

8 SLAB WEAKENED PLANE JOINT
SCALE: NTS



5 WALL EXPANSION JOINT
SCALE: NTS

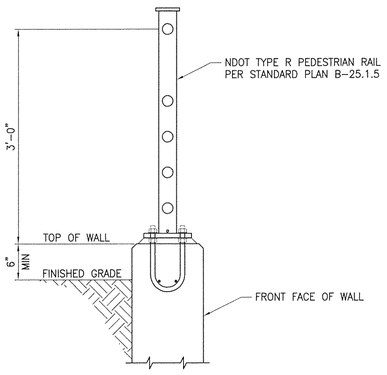


*WALLS SHALL BE STEPPED ONLY AS SHOWN ON THE PLANS

2 FOOTING STEP DETAIL
SCALE: NTS

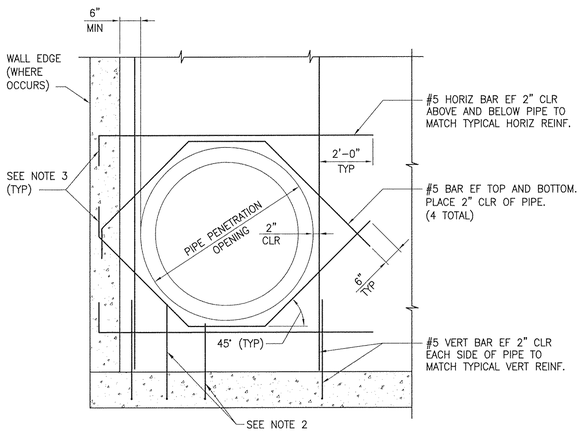
GENERAL STRUCTURAL NOTES:

1. DESIGN SPECIFICATIONS: AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SEVENTH EDITION, 2014.
2. CONSTRUCTION SPECIFICATIONS: CLARK COUNTY UNIFORM STANDARD SPECIFICATIONS FOR PUBLIC WORKS CONSTRUCTION.
3. EXISTING UTILITIES: THE CONTRACTOR SHALL BE RESPONSIBLE FOR LOCATING ALL EXISTING UTILITIES WITHIN THE WORK AREA, AND PROVIDING PROTECTION FOR THE VARIOUS UTILITIES EFFECTED PRIOR TO PROCEEDING WITH THE WORK.
4. INVERTS, SLOPES, BEARINGS, ALIGNMENTS, FINISH GRADE, MANHOLE RIM ELEVATION AND WORKPOINTS SHOWN FOR RCP AND RCB ARE "REFERENCE ONLY". PLANS AND PROFILES ON CIVIL DRAWINGS SHALL GOVERN.
5. ALL PIPE INLETS AND OUTLETS SHALL BE MITERED FLUSH OR SLIGHTLY RECESSED, WITH THE FACE OF THE INTERIOR WALLS.
6. CONTRACTOR SHALL PROVIDE SLOPE STABILIZATION, SHEETING, BRACING, AND/OR SHORING AS REQUIRED TO PROTECT EXISTING EMBANKMENTS, STRUCTURES, AND UNDERGROUND ITEMS.
7. CONCRETE: ALL CONCRETE SHALL BE CLASS D MODIFIED WITH A MINIMUM ULTIMATE COMPRESSIVE STRENGTH f'c=4500psi AT 28 DAYS, UNLESS NOTED OTHERWISE, AND MAXIMUM WATER-CEMENT RATIO OF 0.45. ALL CONCRETE SHALL BE MADE USING TYPE V CEMENT. ALL EXPOSED CORNERS SHALL BE BEVELED 3/4" UNLESS OTHERWISE NOTED.
8. REINFORCING STEEL: ALL REINFORCING STEEL SHALL BE ASTM A615, GRADE 60. DIMENSIONS ARE FROM OUT TO OUT OF BARS. MINIMUM CLEARANCE TO REINFORCING STEEL SHALL BE 3" WHERE PLACED AGAINST SOIL AND 2" ELSEWHERE, UNLESS OTHERWISE NOTED. HOOKS MAY BE ROTATED OR TILTED AS NECESSARY TO PROVIDE PROPER CLEARANCES.
9. BEDDING MATERIAL: BEDDING MATERIAL SHALL BE 6" OF CLARK COUNTY TYPE II AGGREGATE BASE COMPACTED TO AT LEAST 90% OF THE MAXIMUM DRY DENSITY AS ESTABLISHED BY ASTM TEST METHOD D-1557. EXPOSED NATIVE SOILS AT BOTTOM OF EXCAVATION SHALL BE SCARIFIED TO A DEPTH OF 6-INCHES, MOISTURE-CONDITIONED TO WITHIN 2% OF OPTIMUM AND COMPACTED TO AT LEAST 90% PER ASTM D-1557.
10. EPOXY: ADHESIVE ANCHORS SHALL BE SIMPSON STRONG-TIE "SET-XP EPOXY-TIE ADHESIVE" PER ICC ESR-2508 OR APPROVED EQUAL. INSTALL IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
11. WATERPROOFING: PROVIDE WATERPROOFING, THOROSEAL OR EQUAL, ON BACK FACE OF HEADWALLS AND WINGWALLS. INSTALL IN ACCORDANCE WITH MANUFACTURER RECOMMENDATIONS.
12. CAST-IN-PLACE CONCRETE SHALL BE POURED UP AGAINST EXISTING PRECAST RCPs TO PRODUCE TIGHT JOINTS. TYPICAL AT ALL PRECAST/CAST-IN-PLACE INTERFACES.



NOTE:
PROVIDE NDOT TYPE R PEDESTRIAN RAIL AT TOP OF ALL WALLS. REFER TO NDOT STANDARD PLAN B-25.1.5 FOR BALANCE OF INFORMATION INCLUDING DIMENSIONS, MEMBER SIZES, SECTIONS AND TYPICAL DETAILS.

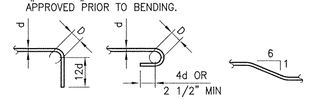
7 PEDESTRIAN RAILING DETAIL
SCALE: NTS



NOTES:
1. TYPICAL WALL REINFORCING NOT SHOWN FOR CLARITY.
2. FIELD CUT TYPICAL WALL REINFORCING 2" CLEAR OF PIPE.
3. IF ADDITIONAL BARS AROUND PENETRATION CANNOT EXTEND BEYOND PIPE AS SHOWN, EXTEND AS FAR AS POSSIBLE AND PROVIDE STANDARD HOOK AT END.

4 PIPE PENETRATION DETAIL
SCALE: NTS

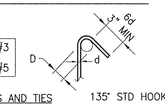
BEND NOTES:
1. ALL BENDS SHALL BE MADE COLD.
2. #14 AND #18 BARS SHALL BE BEND TESTED AND LAB APPROVED PRIOR TO BENDING.



D=6d FOR #3 TO #8
D=8d FOR #9 TO #11
D=10d FOR #14 AND #18

PRINCIPAL REINFORCING

MIN D=1 1/2" FOR #3
MIN D=2" FOR #4
MIN D=2 1/2" FOR #5



STIRRUPS AND TIES — 135° STD HOOK

BAR BENDS

BAR SIZE	LAP CLASS	f'c = 4500 psi TOP BARS CASE 1	TOP BARS CASE 2	OTHER BARS CASE 1	OTHER BARS CASE 2
#3	A	18	27	14	21
	B	23	35	18	27
#4	A	24	35	18	27
	B	31	46	24	35
#5	A	30	44	23	34
	B	38	57	30	44
#6	A	35	53	27	41
	B	46	69	35	53
#7	A	51	77	40	59
	B	67	100	51	77
#8	A	59	88	45	68
	B	76	114	59	88
#9	A	66	99	51	76
	B	86	128	66	99
#10	A	74	111	57	86
	B	96	144	74	111
#11	A	82	123	64	95
	B	107	160	82	123

LAP SCHEDULE

LAP SPLICE NOTES:

1. TABLE FOR USE WITH NORMAL WEIGHT HARDROCK CONCRETE AND GRADE 60 UNCOATED REINF BARS.
2. CLASS A – HALF OR LESS OF THE BARS ARE SPLICED WITHIN A REQ'D LAP LENGTH. CLASS B – MORE THAN HALF OF THE BARS ARE SPLICED WITHIN A REQ'D LAP LENGTH.
3. TOP BARS ARE HORIZ BARS W/ 12" OR MORE OF CONCRETE CAST IN THE MEMBER BELOW THE BAR.
4. LAP SPLICES OF INDIVIDUAL BARS WITHIN A BUNDLE SHALL BE 1.2 Ld FOR THAT BAR IN A 3-BAR BUNDLE AND 1.33 Ld FOR A 4-BAR BUNDLE. ENTIRE BUNDLES SHALL NOT BE LAP SPLICED AT THE SAME LOCATION. SPLICES FOR INDIVIDUAL BARS WITHIN A BUNDLE SHALL BE STAGGERED SUCH THAT THEY DO NOT OVERLAP.
5. Ld=ASIC LAP LENGTH, SHOWN AT RIGHT, (IN INCHES).
6. CASE SELECTION:
   - -FOR FOUNDATION REINF USE CASE 1 UNO
   - -FOR COLUMN REINF AND DOWELS USE CASE 1 UNO
   - -FOR BEAM REINF USE CASE 1 UNO
   - -FOR STRUCT SLAB REINF USE CASE 2 UNO
   - -FOR SLAB ON GRADE REINF USE CASE 1 UNO
   - -FOR WALL REINF AND DOWELS USE CASE 1 (EXCEPT AS NOTED BELOW) UNO
   - -FOR WALLS WITH A SINGLE MAT OF STEEL CENTERED IN THE WALL, USE CASE 1 FOR WALL REINF AND DOWELS UNO
   - -FOR CHORD STEEL REINF USE CASE 2 UNO
   - -FOR DRILLED SHAFTS USE CASE 1 UNO

SPECIAL INSPECTION:

	CONTINUOUS MONITORING	PERIODIC MONITORING
FOUNDATION SOILS		X
SLAB SUB-GRADES		X
REBAR PLACEMENT IN CONCRETE	X	
VERIFICATION OF CONCRETE MIX DESIGN	X	
SAMPLING OF FRESH CONCRETE	X	

1. SPECIAL INSPECTIONS ARE TO BE PERFORMED BY QUALIFIED FIRMS OR PERSONNEL. THE SPECIAL INSPECTOR MUST BE CERTIFIED BY CLARK COUNTY IN THE CATEGORY OF WORK REQUIRED TO HAVE SPECIAL INSPECTION.
2. THE CONSTRUCTION MATERIALS TESTING LABORATORY MUST BE APPROVED BY CLARK COUNTY, FOR TESTING OF MATERIALS, SYSTEMS, COMPONENTS, AND EQUIPMENTS.
3. AS IDENTIFIED WITHIN THE CONTRACT DOCUMENTS, AND THE IBC 2012 BUILDING CODE CHAPTER 17. THE SPECIAL INSPECTORS SHALL MAINTAIN RECORDS OF ALL INSPECTIONS PERTAINING TO THE PORTIONS OF WORK THEY ARE TO INSPECT. PROVIDE COPIES OF REPORTS TO THE OWNER AND ARCHITECT/ ENGINEER PERIODICALLY AND AS REQUIRED FOR ADEQUATE COMMUNICATION AS WORK PROGRESSES.
4. THE SPECIAL INSPECTOR SHALL MAINTAIN A CURRENT "ERROR LOG" WHICH SHALL TRACK ALL WORK NOT IN COMPLIANCE WITH THE CONTRACT DOCUMENTS, SHALL TRACK WHEN WORK ITEMS NOT IN COMPLIANCE HAVE BEEN CORRECTED OR WHEN ITEMS HAVE BEEN ACCEPTED, IN WRITING, AS CONSTRUCTED BY THE ENGINEER OF RECORD.

1 REINFORCING LAP SPLICING
SCALE: NTS

STATE OF NEVADA — PROFESSIONAL ENGINEER — ERIC G. GILES — No. 14511 — EXP. 06/30/2017 — CIVIL STRUCTURAL

DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

RCV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP	DATE

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-08-15
PLOT TIME: 10:15:26

G.C. WALLACE COMPANIES
ENGINEERS | PLANNERS | SURVEYORS
1555 S. RAINBOW BLVD. LAS VEGAS, NV. 89146
T: 702.804.2000 - F: 702.804.2299 - GCWALLACE.COM
LAS VEGAS

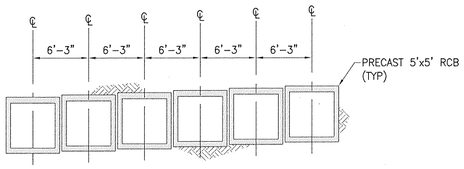
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David Turner

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS
TYPICAL STRUCTURAL DETAILS AND NOTES

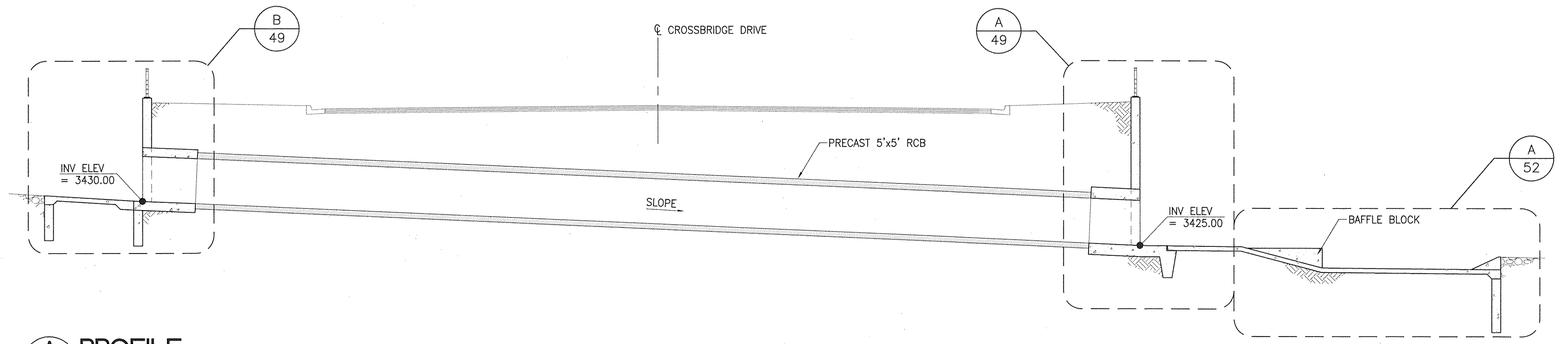
DRAWING 47
47 OF 53 SHTS

SID NO. 812 PROJECT 2

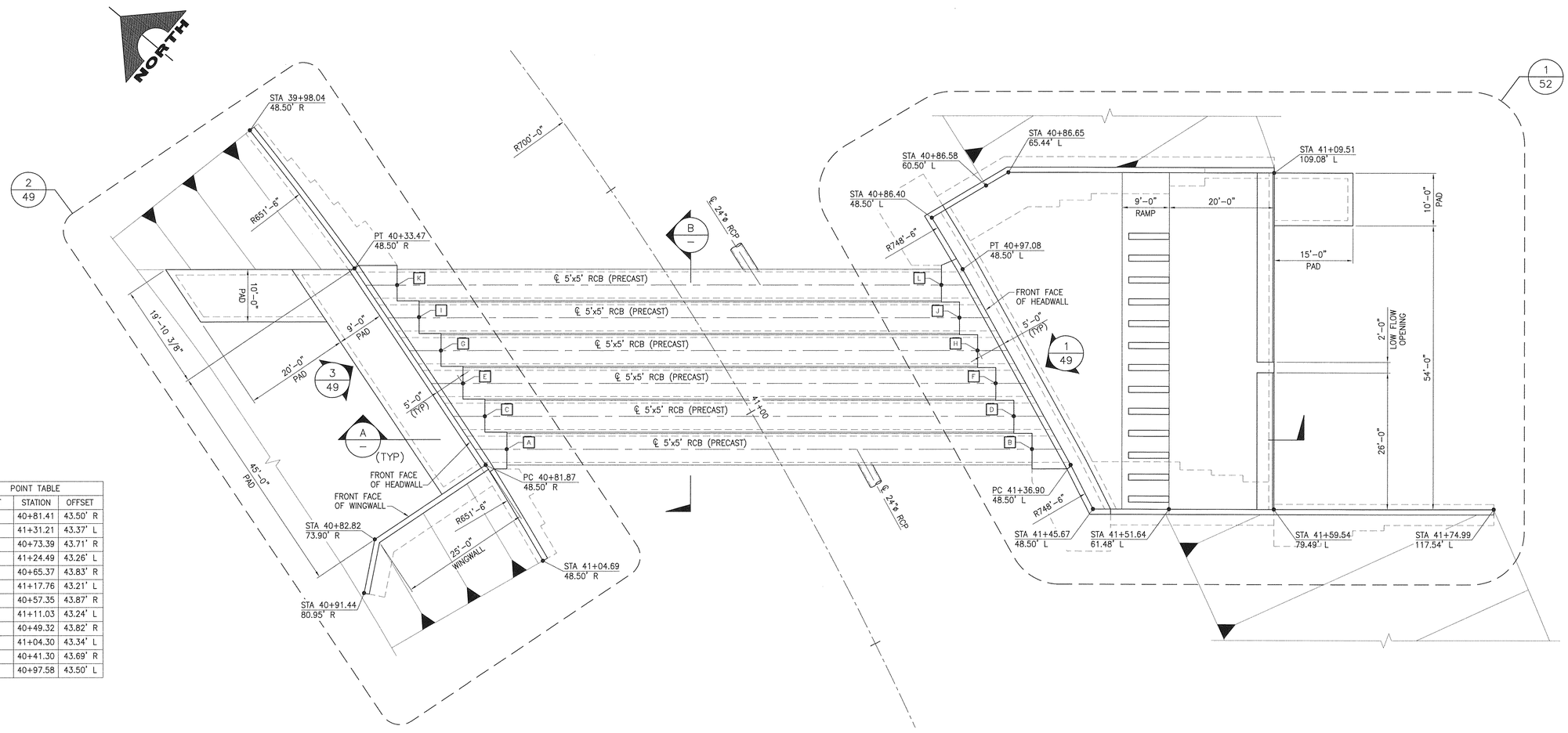
cw24.36.dwg 07/2013 Jw



B TYP SECTION AT PRECAST (6)-5'x5' RCB
SCALE: 1/8" = 1'-0"



A PROFILE
SCALE: 1/8" = 1'-0"



POINT TABLE		
POINT	STATION	OFFSET
A	40+81.41	43.50' R
B	41+31.21	43.37' L
C	40+73.39	43.71' R
D	41+24.49	43.26' L
E	40+65.37	43.83' R
F	41+17.76	43.21' L
G	40+57.35	43.87' R
H	41+11.03	43.24' L
I	40+49.32	43.82' R
J	41+04.30	43.34' L
K	40+41.30	43.69' R
L	40+97.58	43.50' L

1 PLAN - DRAINAGE CORRIDOR CROSSING
SCALE: 3/32" = 1'-0"

ERIC G. GILES
No. 14510
STATE OF NEVADA
PROFESSIONAL ENGINEER
STRUCTURAL
DATE: 10/09/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN APP	DATE	GCW APP

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 10:15:56

G.C. WALLACE COMPANIES
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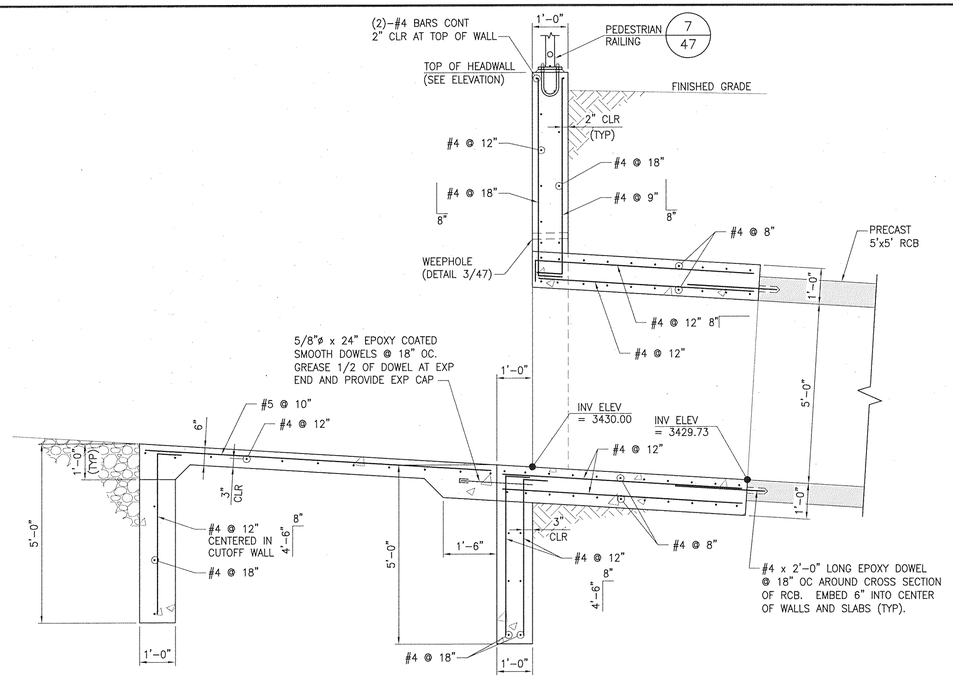
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David Turner

THE HOWARD HUGHES COMPANY, LLC
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS
DRAINAGE CORRIDOR STRUCTURAL DETAILS 1

DRAWING
48
48 OF 53 SHTS

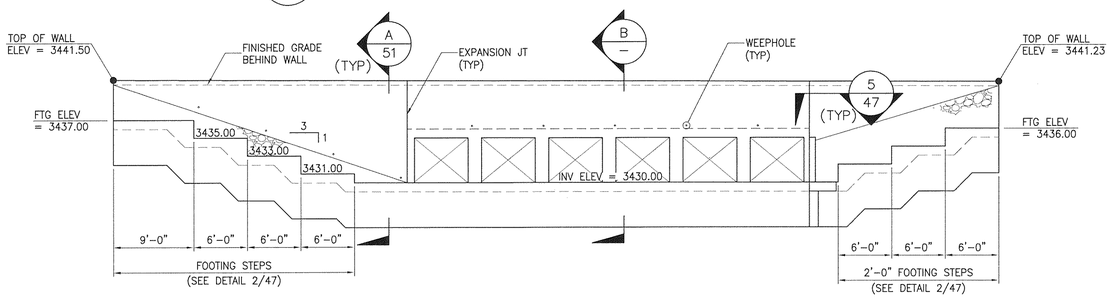
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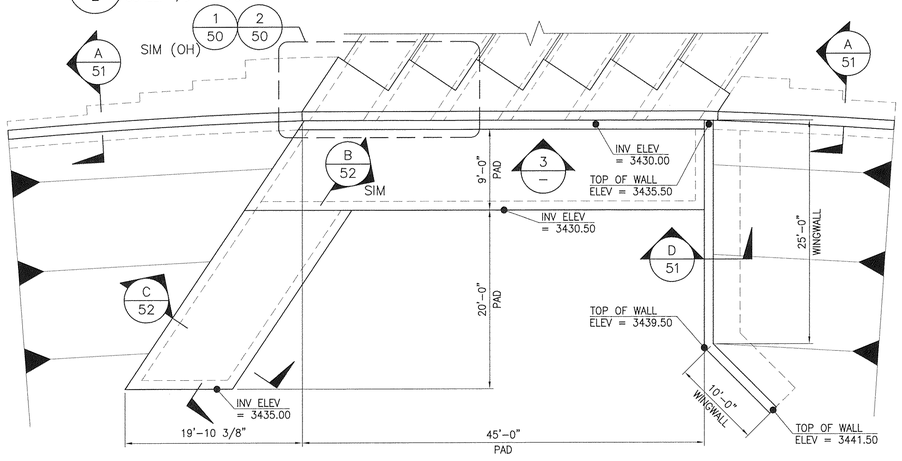
B – UPSTREAM HEADWALL SECTION

SCALE: 1/2" = 1'-0"



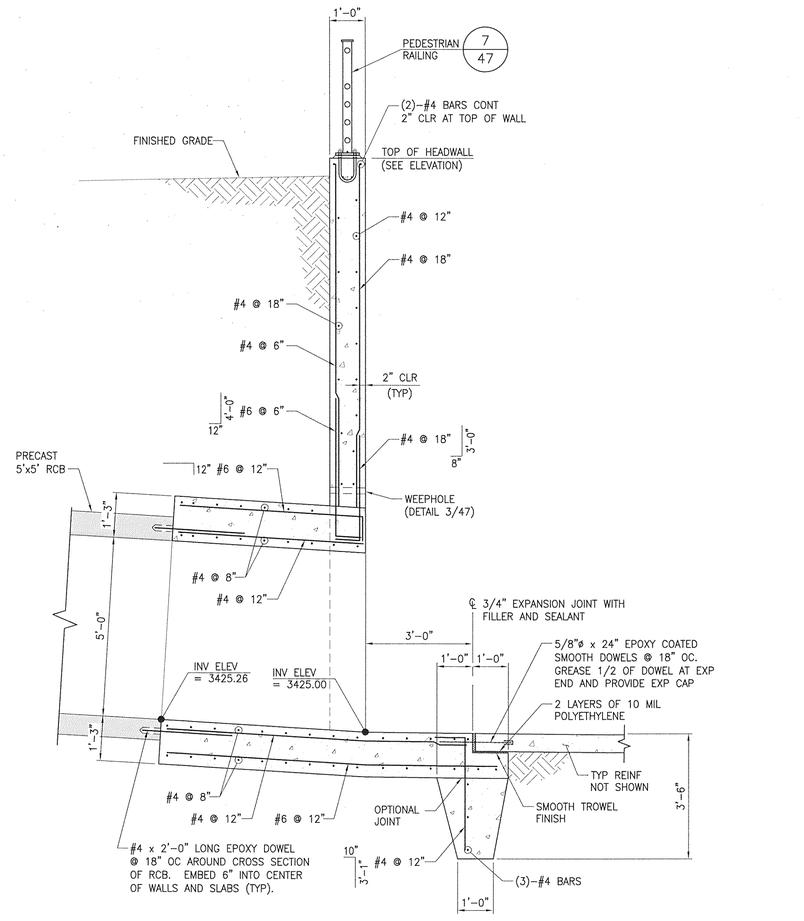
3 – UPSTREAM HEADWALL ELEVATION

SCALE: 1/8" = 1'-0"



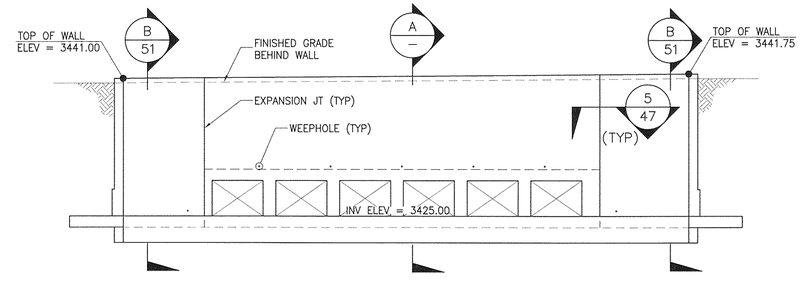
2 – UPSTREAM HEADWALL ENLARGED PLAN

SCALE: 1/8" = 1'-0"



A – DOWNSTREAM HEADWALL SECTION

SCALE: 1/2" = 1'-0"



1 – DOWNSTREAM HEADWALL ELEVATION

SCALE: 1/8" = 1'-0"

STATE OF NEVADA
PROFESSIONAL ENGINEER
ERIC G. GILES
No. 14510
STRUCTURAL
CIVIL
DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	AGEN. APP	DATE	GCW APP	DATE

PROJECT NO. 62024-222
DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-26-15
PLOT TIME: 10:16:23

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LAS VEGAS

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David Turner

THE HOWARD HUGHES COMPANY, LLC

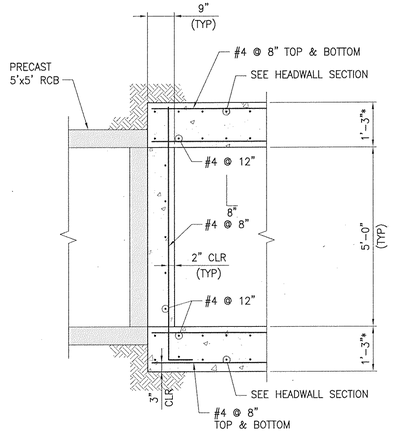
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

DRAINAGE CORRIDOR STRUCTURAL DETAILS 2

DRAWING
49
49 OF 53 SHTS

SID NO. 812 PROJECT 2

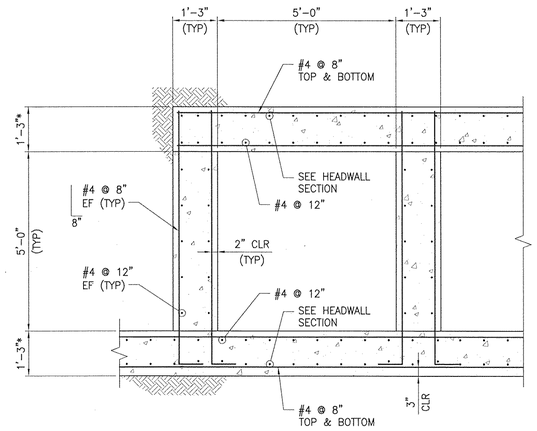
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* DOWNSTREAM HEADWALL SHOWN.
THICKNESS AT UPSTREAM HEADWALL = 1'-0".

B / - SECTION

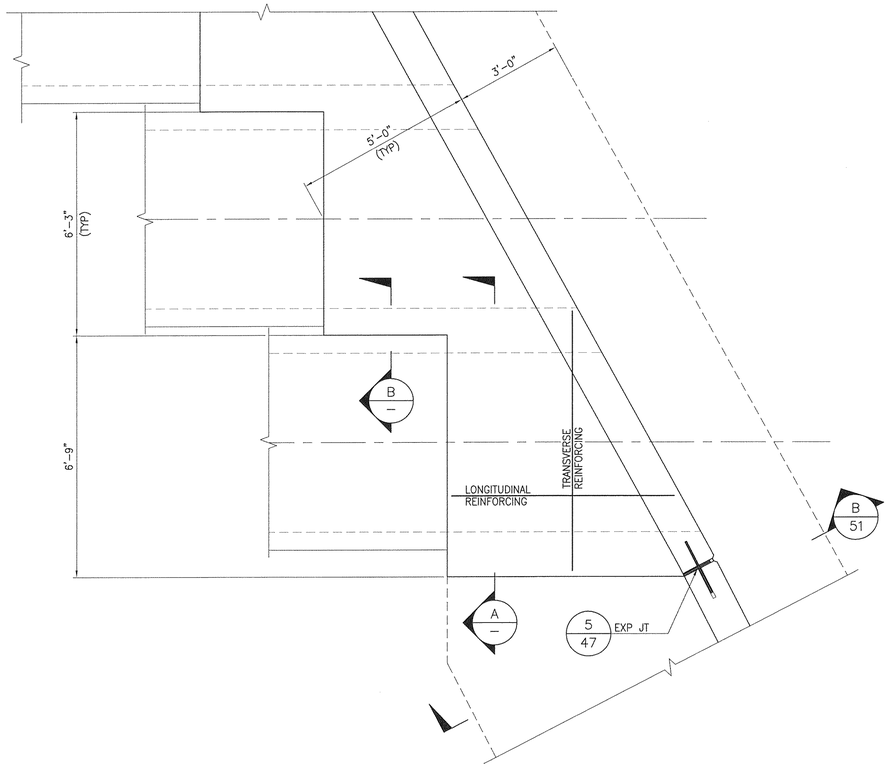
SCALE: 1/2" = 1'-0"



* DOWNSTREAM HEADWALL SHOWN.
THICKNESS AT UPSTREAM HEADWALL = 1'-0".

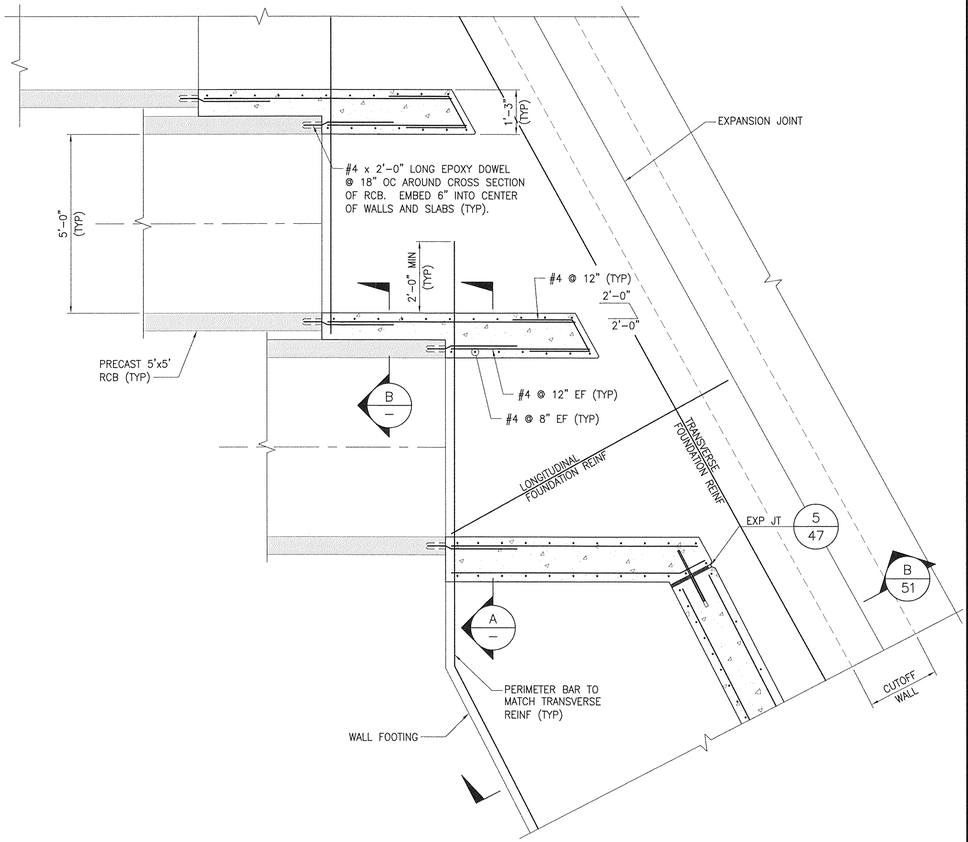
A / - SECTION

SCALE: 1/2" = 1'-0"



2 / - JUNCTION TOP SLAB PLAN

SCALE: 1/2" = 1'-0"



1 / - JUNCTION FOUNDATION PLAN

SCALE: 1/2" = 1'-0"

STATE OF NEVADA
PROFESSIONAL ENGINEER
ERIC G. GILES
No. 14337
CIVIL / STRUCTURAL
DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	CCW APP

PROJECT NO. 62024-222

DESIGN: CCW
DRAWN: CCW
CHECK: JLJ
PLOT DATE: 10-05-15
PLOT TIME: 10:16:50

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David Turner

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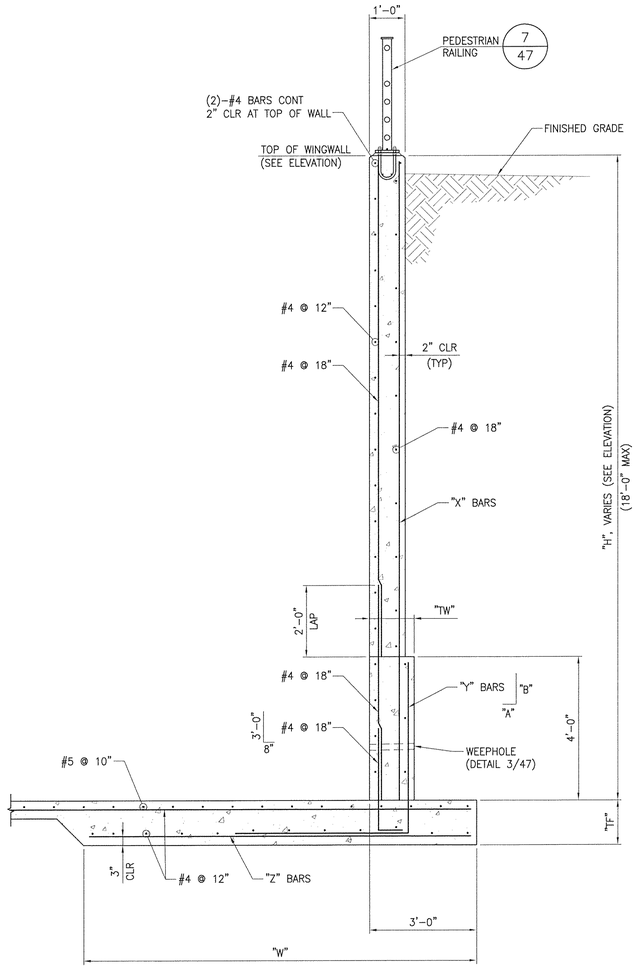
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

DRAINAGE CORRIDOR STRUCTURAL DETAILS 3

DRAWING
50
50 OF 53 SHTS

SID NO. 812 PROJECT 2

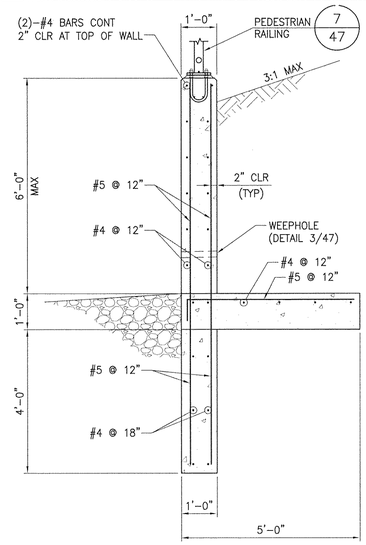
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DIMENSIONS				"X" BARS	"Y" BARS	"Z" BARS	"A"	"B"
H	W	TW	TF					
≤ 6'-0"	4'-0"	1'-0"	1'-0"	#4 @ 9"	#4 @ 9"	#4 @ 9"	8"	2'-9"
≤ 8'-0"	5'-6"	1'-0"	1'-0"	#4 @ 9"	#5 @ 9"	#4 @ 9"	10"	3'-3"
≤ 10'-0"	7'-0"	1'-0"	1'-0"	#4 @ 6"	#5 @ 6"	#4 @ 6"	10"	3'-3"
≤ 12'-0"	8'-3"	1'-0"	1'-0"	#4 @ 6"	#6 @ 6"	#5 @ 6"	12"	3'-9"
≤ 14'-0"	9'-6"	1'-3"	1'-3"	#5 @ 6"	#7 @ 6"	#5 @ 6"	4'-10"	4'-10"
≤ 16'-0"	10'-6"	1'-3"	1'-3"	#6 @ 6"	#8 @ 6"	#6 @ 6"	4'-10"	4'-10"
≤ 18'-0"	12'-0"	1'-3"	1'-3"	#7 @ 6"	#9 @ 6"	#7 @ 6"	4'-10"	4'-10"

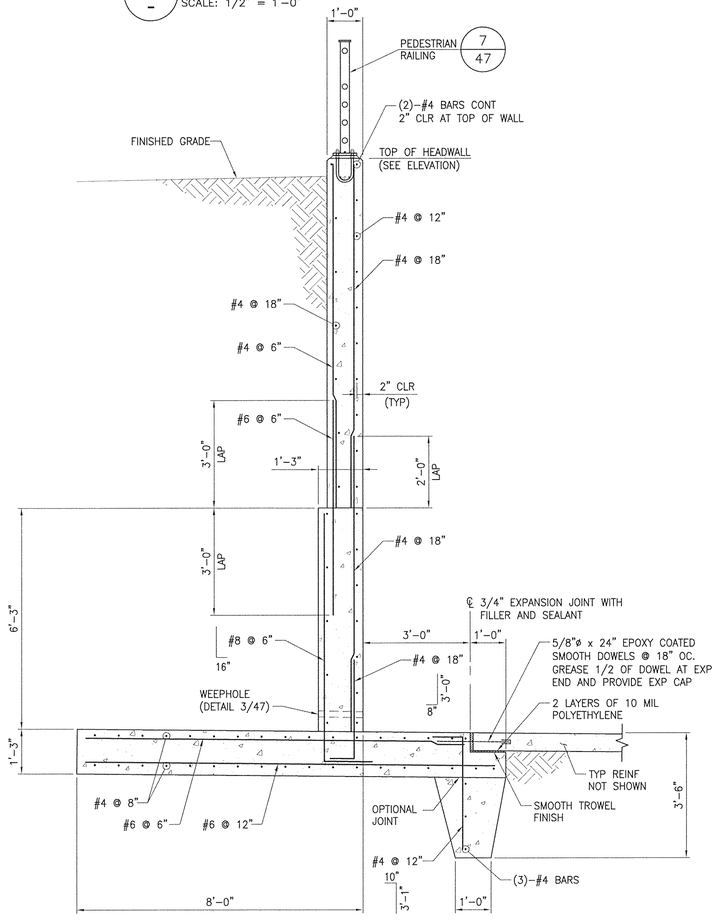
C - TYPICAL OUTLET WALL SECTION

SCALE: 1/2" = 1'-0"



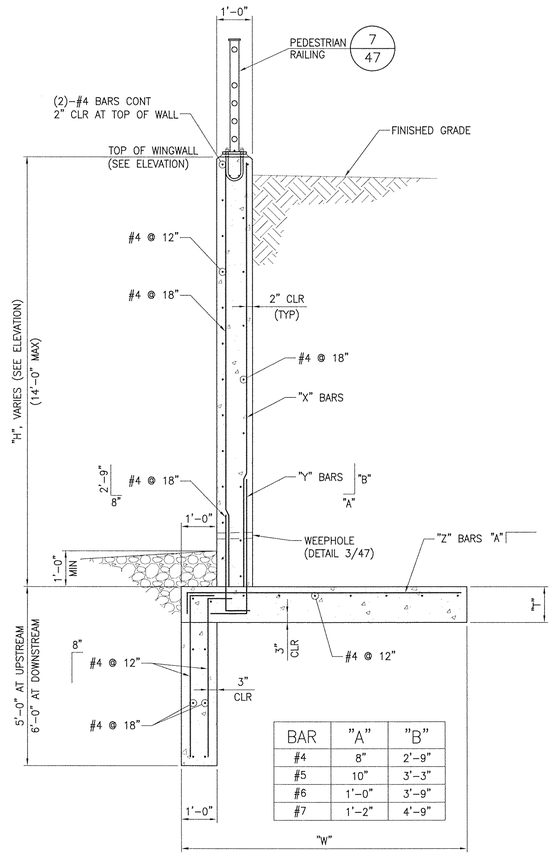
D - TYPICAL WINGWALL SECTION

SCALE: 1/2" = 1'-0"



B - WALL SECTION AT OUTLET

SCALE: 1/2" = 1'-0"



BAR	"A"	"B"
#4	8"	2'-9"
#5	10"	3'-3"
#6	1'-0"	3'-9"
#7	1'-2"	4'-9"

WINGWALL SCHEDULE ("H" ≤ 14'-0")					
DIMENSIONS			"X"* BARS	"Y" BARS	"Z" BARS
H	W	T			
≤ 4'-0"	3'-0"	1'-0"	#4 @ 12"	#4 @ 12"	#4 @ 12"
≤ 6'-0"	4'-0"	1'-0"	#4 @ 9"	#4 @ 9"	#4 @ 9"
≤ 8'-0"	5'-0"	1'-0"	#4 @ 9"	#5 @ 9"	#4 @ 9"
≤ 10'-0"	6'-0"	1'-0"	#4 @ 6"	#5 @ 6"	#4 @ 6"
≤ 12'-0"	8'-0"	1'-0"	#4 @ 6"	#6 @ 6"	#5 @ 6"
≤ 14'-0"	9'-6"	1'-3"	#5 @ 6"	#7 @ 6"	#7 @ 6"

* "X" BARS MAY BE ELIMINATED BY EXTENDING THE "Y" BARS TO THE TOP OF THE RETAINING WALL.

A - TYPICAL WINGWALL SECTION

SCALE: 1/2" = 1'-0"

STATE OF NEVADA — PROFESSIONAL ENGINEER
ERIC G. GILES
No. 14457
CIVIL / STRUCTURAL
DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REV	DATE	DESCRIPTION	DATE	AGEN. APP	DATE	GCW APP

PROJECT NO. 62024-222

DESIGN: GCW
DRAWN: GCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 10:17:16

G.C. WALLACE COMPANIES
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David Turner

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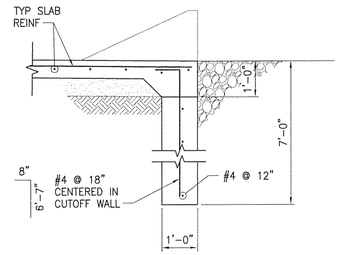
VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2
IMPROVEMENT PLANS

DRAINAGE CORRIDOR STRUCTURAL DETAILS 4

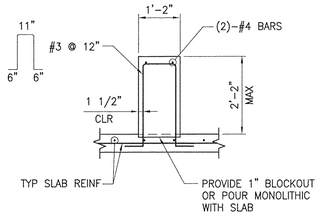
DRAWING
51
51 OF 53 SHTS

SID NO. 812 PROJECT 2

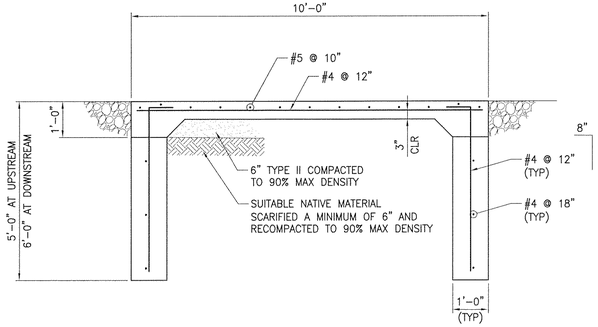
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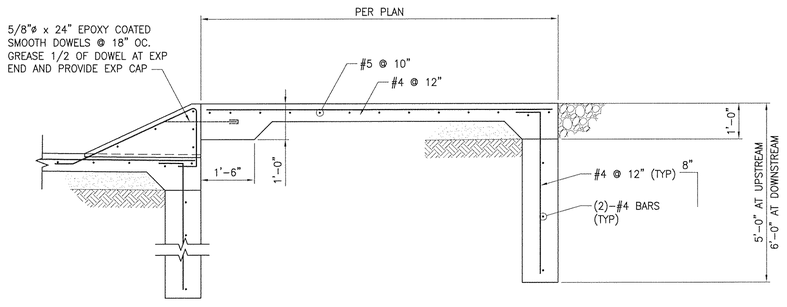
E SECTION
SCALE: 1/2" = 1'-0"



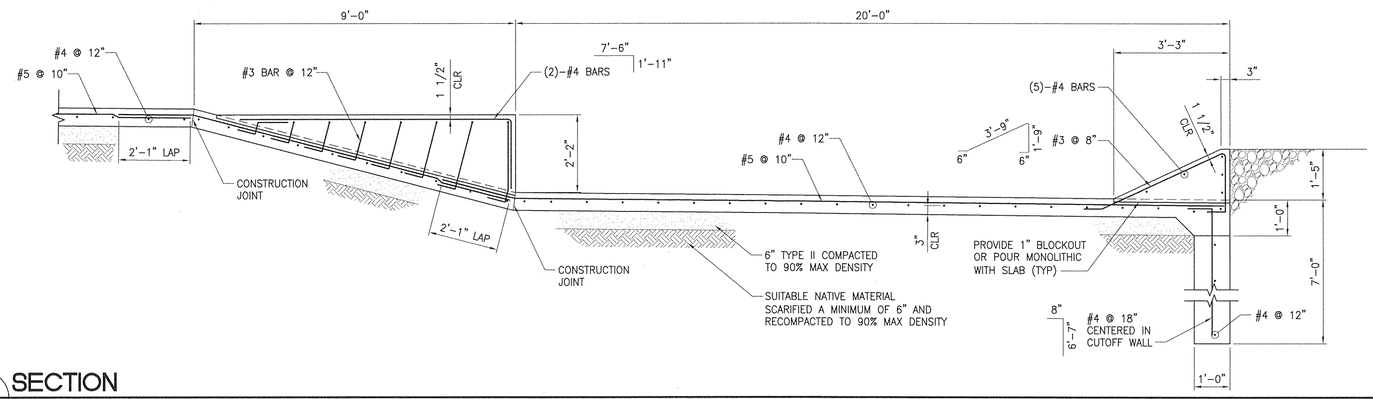
D SECTION
SCALE: 1/2" = 1'-0"



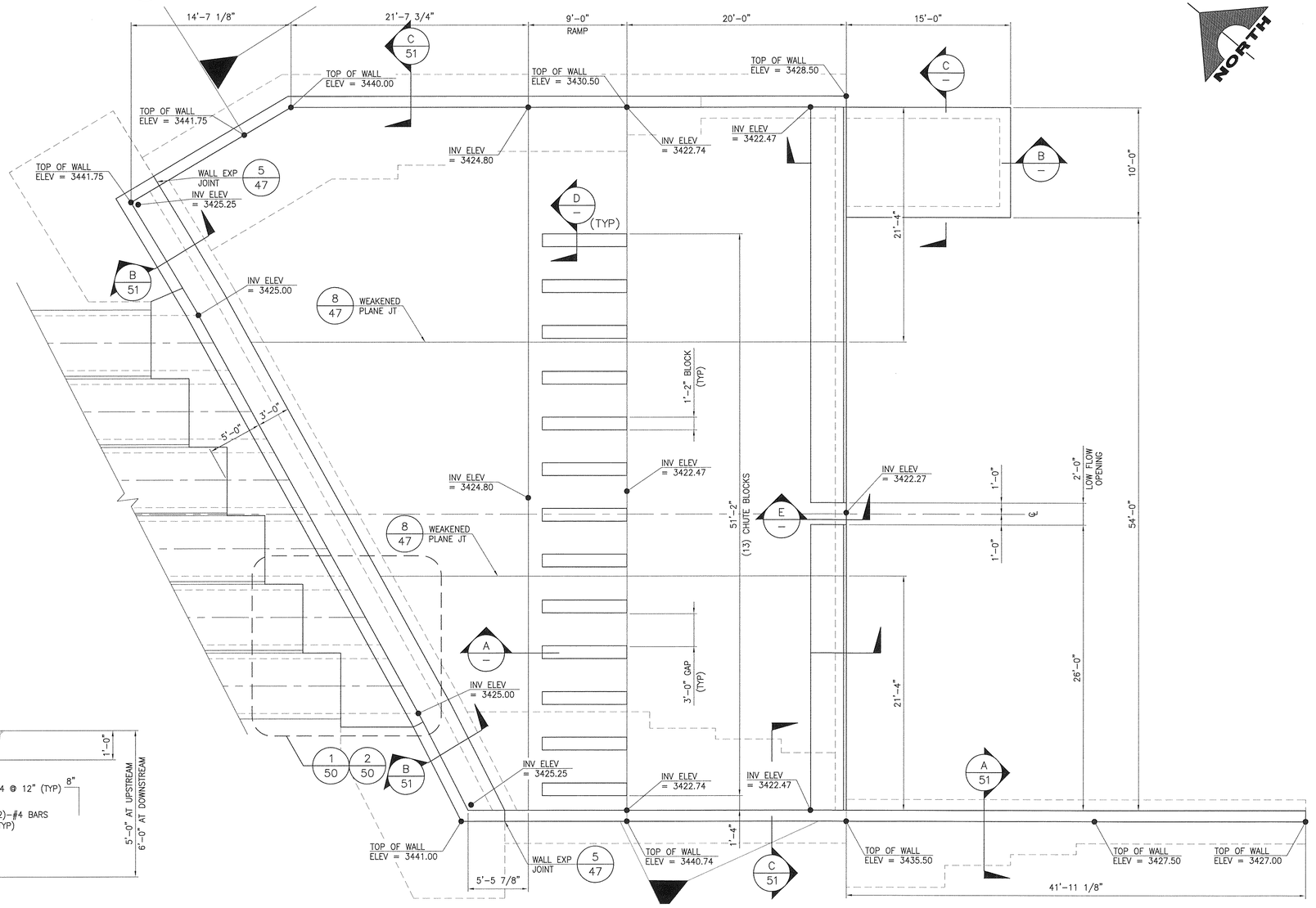
C SECTION
SCALE: 1/2" = 1'-0"



B SECTION
SCALE: 1/2" = 1'-0"



A SECTION
SCALE: 1/2" = 1'-0"



1 ENLARGED PLAN - DRAINAGE CORRIDOR CROSSING OUTLET STRUCTURE
SCALE: 3/16" = 1'-0"

STATE OF NEVADA — PROFESSIONAL ENGINEER — ERIC G. GILES — No. 14457 — CIVIL/STRUCTURAL — DATE: 10/06/2015

TDS UPDATE - 10/01/2015 - NOT FOR CONSTRUCTION

REVI	DATE	DESCRIPTION	DATE	AGEN APP	DATE	CCW APP	DATE

PROJECT NO. 62024-222
DESIGN: CCW
DRAWN: CCW
CHECK: JLJ
PLOT DATE: 10-06-15
PLOT TIME: 10:17:43

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David Turner

THE HOWARD HUGHES COMPANY, LLC

VILLAGE 24 - CROSSBRIDGE DRIVE UNIT 2 IMPROVEMENT PLANS

OUTLET STRUCTURE PLAN AND DETAILS

DRAWING 52
52 OF 53 SHTS

SID NO. 812 PROJECT 2

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