

# CITY OF ALBUQUERQUE

Planning Department  
Brennon Williams, Interim Director



Mayor Timothy M. Keller

July 11, 2019

Scott Eddings, P.E.  
Huitt-Zollars  
333 Rio Rancho Blvd., Suite 101  
Rio Rancho, NM 87124

RE: **Winrock Road B Extension**  
**2100 Louisiana Blvd NE**  
**Grading Plan Stamp Date: 7/5/19**  
**Drainage Report Stamp Date: 7/5/19**  
**Hydrology File: J19D058G**

Dear Mr. Eddings:

PO Box 1293

Based on submittal received on 7/8/19, the Grading Plan and Drainage Report are approved for Site Plan for Building Permit and Plat. This Grading Plan needs to be included in the Road-B Site Plan.

Albuquerque

Prior to Grading Permit, Paving Permit & Work Order (For Information):

NM 87103

www.cabq.gov

1. Additional information is needed for the Stormwater Quality (SWQ) Pond:
  - a. Provide SWQ volume calculations ( $\text{Vol.} = 0.34/12(\text{ft}) \times \text{contributing imp.area}(\text{sf})$ ).
  - b. The SWQ volume (TBD) must be retained below the grate elevation of the beehive outfall. Pond bottom likely needs to be lowered.
  - c. The pond outfall (beehive grate) needs to be sized for 2x the 100-yr peak inflow (or 50% clogging) or provide an overland flow path that does not adversely impact the buildings or garage entrance.
  - d. Show and label the SWQ water surface elevation (WSE) and volume and the 100-yr WSE and volume.
2. Inlet 4c is shown as a type double-C in appendix C, seems to be a type double-D on the grading plan (it also doesn't seem to be built into a curb). Please correct.
3. As a reminder, if the project total area of disturbance (including the staging area and any work within the adjacent Right-of-Way) is 1 acre or more, then an Erosion and Sediment Control (ESC) Plan and Owner's certified Notice of Intent (NOI) is required to be submitted to the Stormwater Quality Engineer (Curtis Cherne, PE, [ccherne@cabq.gov](mailto:ccherne@cabq.gov), 924-3420) 14 days prior to any earth disturbance.
4. Because these corrections are minor, the administrative resubmittal fee of \$40 may be used. Please include a copy of this letter when resubmitting in order to receive the reduced fee. A

# CITY OF ALBUQUERQUE

*Planning Department*  
Brennon Williams, Interim Director



*Mayor Timothy M. Keller*

digital-only submittal will be acceptable (but the fee and DTIS form still need to be turned in to the front desk).

If you have any questions, please contact me at 924-3695 or [dpeterson@cabq.gov](mailto:dpeterson@cabq.gov).

Sincerely,

A handwritten signature in black ink, appearing to read 'D. Peterson'.

Dana Peterson, P.E.  
Senior Engineer, Planning Dept.  
Development Review Services

PO Box 1293

Albuquerque

NM 87103

[www.cabq.gov](http://www.cabq.gov)

# WINROCK TOWN CENTER ROAD B EXTENSION DRAINAGE STUDY

Prepared For



Project Location:

Albuquerque, New Mexico

JULY 2019



Prepared By

**HUITT-ZOLLARS**

ENGINEERING ARCHITECTURE CONSTRUCTION MANAGEMENT SURVEY

6501 Americas Parkway, NE, Suite 830

Albuquerque, NM 87110

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**WINROCK TOWN CENTER ROAD B EXTENSION  
DRAINAGE STUDY**

**CITY OF ALBUQUERQUE  
PROJECT NO. 4553.90**

**PREPARED FOR:**



**PREPARED BY:**

**HUITT-ZOLIARS**  
**333 RIO RANCHO BLVD., SUITE 101**  
**RIO RANCHO, NEW MEXICO 87124**

**JULY 2019**

**HZI Project No. R303699.04**



## **Winrock Town Center Road B Extension Drainage Study**

*I, Scott A. Eddings, being first duly sworn upon my oath, state that I am a registered professional engineer, qualified in civil engineering and that the accompanying report was prepared by me or under my supervision and is true and correct to the best of my knowledge and belief.*





|                           |   |
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## **APPENDICES**

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## **INTRODUCTION**

This drainage report addresses the proposed infrastructure required to convey the storm water runoff from Road B Extension and surrounding developments. Existing and proposed conditions have been analyzed to determine infrastructure requirements to improve drainage conditions along Road B Extension.

## **FLOOD HAZARD ZONE**

Winrock Town Center does not lie within a flood zone as shown on Flood Insurance Rate Map Number 35001C0352H, dated August 16, 2012. See Appendix A for the FEMA Flood Insurance Rate Map.

## **RELATED REPORTS**

This report references the Drainage Master Plan for Winrock Town Center (DMP) by Isaacson & Arfman, PA, dated June 26, 2015. The DMP provided analysis for Winrock Town Center. All hydrology calculations were completed for the 100-year, 6-hour storm. The DMP defines allowable peak flowrates at major analysis points. This drainage study for Road B Extension will utilize hydrology calculations from the DMP.

This report also references the Winrock Town Center Drainage Implementation Plan (DIP) by Huitt-Zollars, Inc., dated May 23, 2019. The DIP provides a basis for storm drain system recommendations for this report.

## **JURISDICTIONS OF PUBLIC AGENCIES**

This project is located entirely within the City of Albuquerque (CoA) Municipal Limits and is therefore within their jurisdiction and must comply with the City's development requirements. The storm drain system will remain private as it currently is.

## **METHODOLOGY**

This drainage report follows procedures outlined in the Development Process Manual, Chapter 22, by City of Albuquerque (DPM). This report will utilize hydrology calculations from the DMP. This report will utilize Bentley StormCAD V8i for the hydraulic modeling of the storm drain pipe system. For headloss calculations at junctions, the HEC-22 Energy Method (Third Edition) was chosen to comply with City of Albuquerque DPM requirements. See Appendix E for the StormCAD output files.



## **EXISTING CONDITIONS**

Winrock site is a complex of buildings that includes the main mall, a number of outlying restaurants, Chuze, and movie theater. The existing mall building is composed of a number of individual buildings that were closed by an overall structure. The site is approximately 80 acres which is approximately 88% impervious. As previously studied in recent drainage reports, the site has multiple drainage outfalls which are summarized below and shown on Exhibit 1 of the Winrock Town Center Drainage Implementation Plan:

- AP-A – Discharge flowrate = 81.9 CFS
- AP-B – Discharge flowrate = 123.4 CFS
- AP-C – Discharge flowrate = 15.5 CFS
- AP-D – Discharge flowrate = 120.1 CFS
- AP-E – Discharge flowrate = 5.5 CFS
- AP-F – Discharge flowrate = 12.9 CFS
- AP-G – Discharge flowrate = 81.1 CFS

Winrock Partners, LLC completed Phase A infrastructure improvements in 2017. Phase A infrastructure included the following roadway segments as summarized below:

- Road B from Louisiana Blvd to the western face of the existing Winrock Mall
  - public roadway
  - public storm drain
  - public water line
  - public sanitary sewer line
  - public reuse water line
- Road C from Uptown Loop to current Men's Warehouse,
  - public roadway
  - public storm drain
  - public water line
  - public sanitary sewer line
- Road D from Road B to Road C
  - public roadway
  - public storm drain
  - public water line

Road B Extension project occurs within the demolished portion of Winrock Mall and will connect the existing Road B to the Regal Cinemas parking lot.



## PROPOSED CONDITIONS

Construction limits of this project are the Regal Cinemas at the east end and Road D at the west end along the Road B Extension corridor. This project proposes to build the roadway, associated underground utilities, and the necessary storm drain improvements affecting the Road B Extension project area.

See Appendix B for a Basin Map. Existing basins delineated from the DMP are used for this report. Proposed basins affecting the drainage within the Road B Extension project are delineated from the proposed grading plan to be completed in conjunction with this drainage report. The proposed basins are slightly modified from the DMP existing basins, however, the minor changes do not affect the overall drainage system of Winrock Town Center. This project discharges into the storm drain systems of Analysis Point B (AP-B) and Analysis Point D (AP-D). Proposed basin peak flowrates were prorated from the DMP existing basins. Refer to the table below for a flowrate comparison at the ultimate outfalls of AP-B and AP-D.

| Analysis Point | Allowable Q per DMP (CFS) | Actual Q (CFS) |
|----------------|---------------------------|----------------|
| AP-B           | 123.4                     | 121.9          |
| AP-D           | 120.1                     | 118.6          |

All drainage inlets to be installed with this project are designed in a sump condition. Refer to Appendix C for inlet calculations.

Storm Drain System AP-D begins with three contributing basins: SW Culverts, SW Culverts 1, and First Flush. These three basins drain into a stormwater quality pond and directly into the AP-D storm drain. Basin MH7A will collect flow from the west end of the Road B Extension project and drain into AP-D before it connects into the existing storm drain.

Storm Drain System AP-B begins with Basin MH9A1, Basin Inlet 8C, and Basin MH7 which collects developed runoff from the northeast corner of the site. Basin MH6 will then drain into AP-B from a future detention pond. Basin Inlet 4B is the final contributing basin into AP-B from the Road B Extension project before it connects into the existing storm drain of AP-B.

The hydraulic capacity of the existing storm drain systems have been modeled and determined that it can adequately convey storm water from the project area during the design storm event. Hydraulic analysis of the storm drain system was completed with the use of StormCAD, a sewer modeling program. Please refer to Appendix E for StormCAD Output Files. Construction plans for this project include hydraulic grade lines computed by StormCAD.



### **STORMWATER QUALITY**

As part of compliance with the stormwater quality program implemented by the City of Albuquerque in cooperation with the EPA, a number of Low Impact Development (LID) strategies are included in the Road B Extension project. First, a swale between the sidewalk and curb will be installed on the north side of the roadway to collect roadway runoff. This swale connects to a detention facility that will manage the first flush volume of a storm and then convey stormwater into the storm drain system. Finally, a larger detention pond will be built at the east end of Road B Extension with a future construction phase. This pond will serve as a dual use stormwater quality management and flood control device. With the installation of these LID strategies, the stormwater released within the Road B Extension project limits will be effectively treated.

### **CONCLUSION**

This report provides a conceptual design and analysis of proposed improvements to safely manage stormwater generated along the Road B Extension project. In addition to stormwater management, this project will integrate techniques to improve stormwater quality. For a detailed design, please refer to the construction plans that were completed in conjunction with this drainage report.

# National Flood Hazard Layer FIRMette



## Legend

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

|                             |  |                                                                                                                                                                   |
|-----------------------------|--|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| SPECIAL FLOOD HAZARD AREAS  |  | Without Base Flood Elevation (BFE)<br>Zone A, V, A99                                                                                                              |
|                             |  | With BFE or Depth Zone AE, AO, AH, VE, AR                                                                                                                         |
|                             |  | Regulatory Floodway                                                                                                                                               |
| OTHER AREAS OF FLOOD HAZARD |  | 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile Zone X |
|                             |  | Future Conditions 1% Annual Chance Flood Hazard Zone X                                                                                                            |
|                             |  | Area with Reduced Flood Risk due to Levee. See Notes. Zone X                                                                                                      |
|                             |  | Area with Flood Risk due to Levee Zone D                                                                                                                          |
| OTHER AREAS                 |  | Area of Minimal Flood Hazard Zone X                                                                                                                               |
|                             |  | Effective LOMRs                                                                                                                                                   |
| GENERAL STRUCTURES          |  | Area of Undetermined Flood Hazard Zone D                                                                                                                          |
|                             |  | Channel, Culvert, or Storm Sewer                                                                                                                                  |
|                             |  | Levee, Dike, or Floodwall                                                                                                                                         |
| OTHER FEATURES              |  | Cross Sections with 1% Annual Chance Water Surface Elevation                                                                                                      |
|                             |  | Coastal Transect                                                                                                                                                  |
|                             |  | Base Flood Elevation Line (BFE)                                                                                                                                   |
|                             |  | Limit of Study                                                                                                                                                    |
|                             |  | Jurisdiction Boundary                                                                                                                                             |
|                             |  | Coastal Transect Baseline                                                                                                                                         |
| MAP PANELS                  |  | Profile Baseline                                                                                                                                                  |
|                             |  | Hydrographic Feature                                                                                                                                              |
| MAP PANELS                  |  | Digital Data Available                                                                                                                                            |
|                             |  | No Digital Data Available                                                                                                                                         |
|                             |  | Unmapped                                                                                                                                                          |



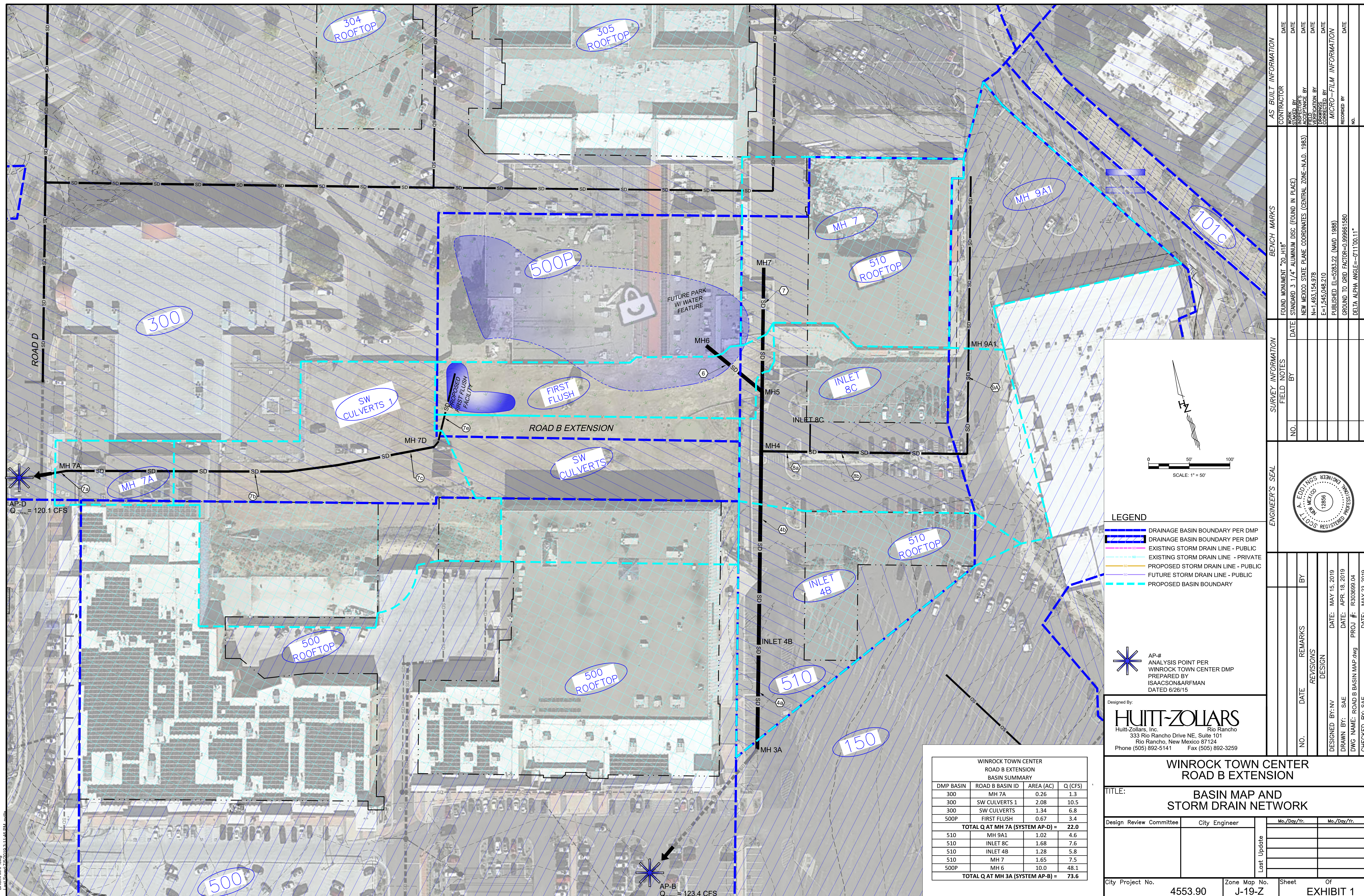
The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

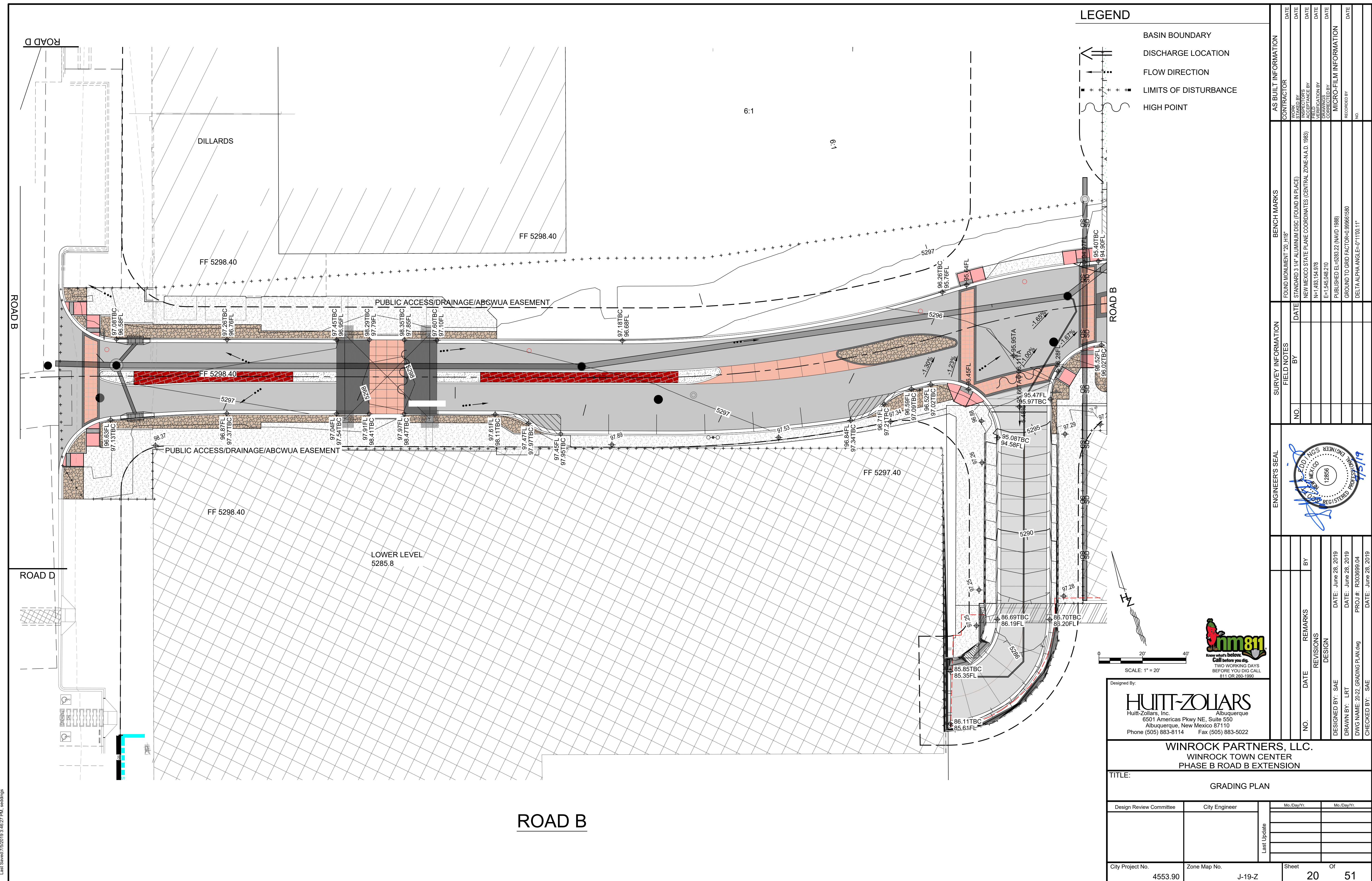
This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

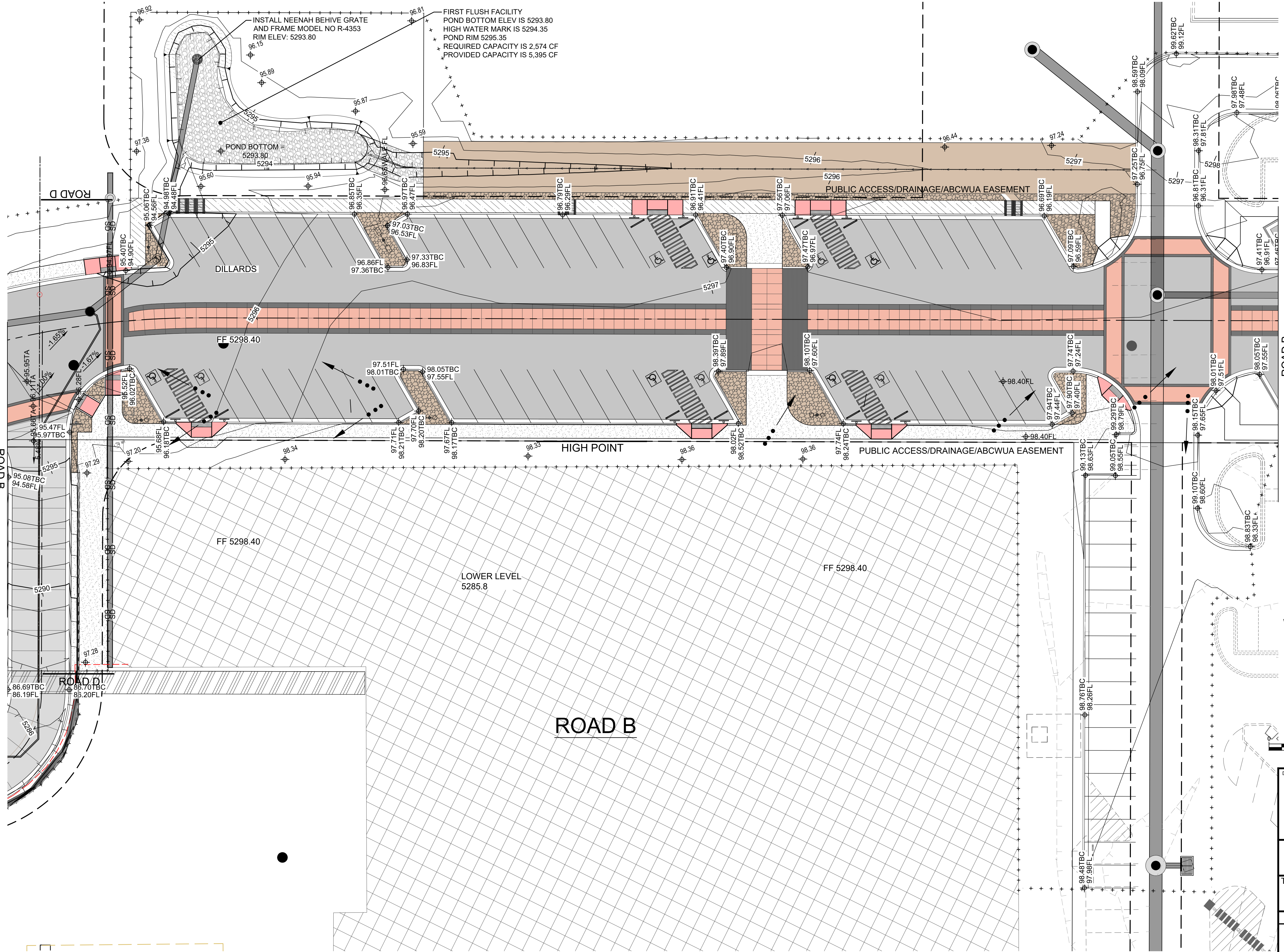
The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on **5/20/2019 at 6:31:42 PM** and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

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

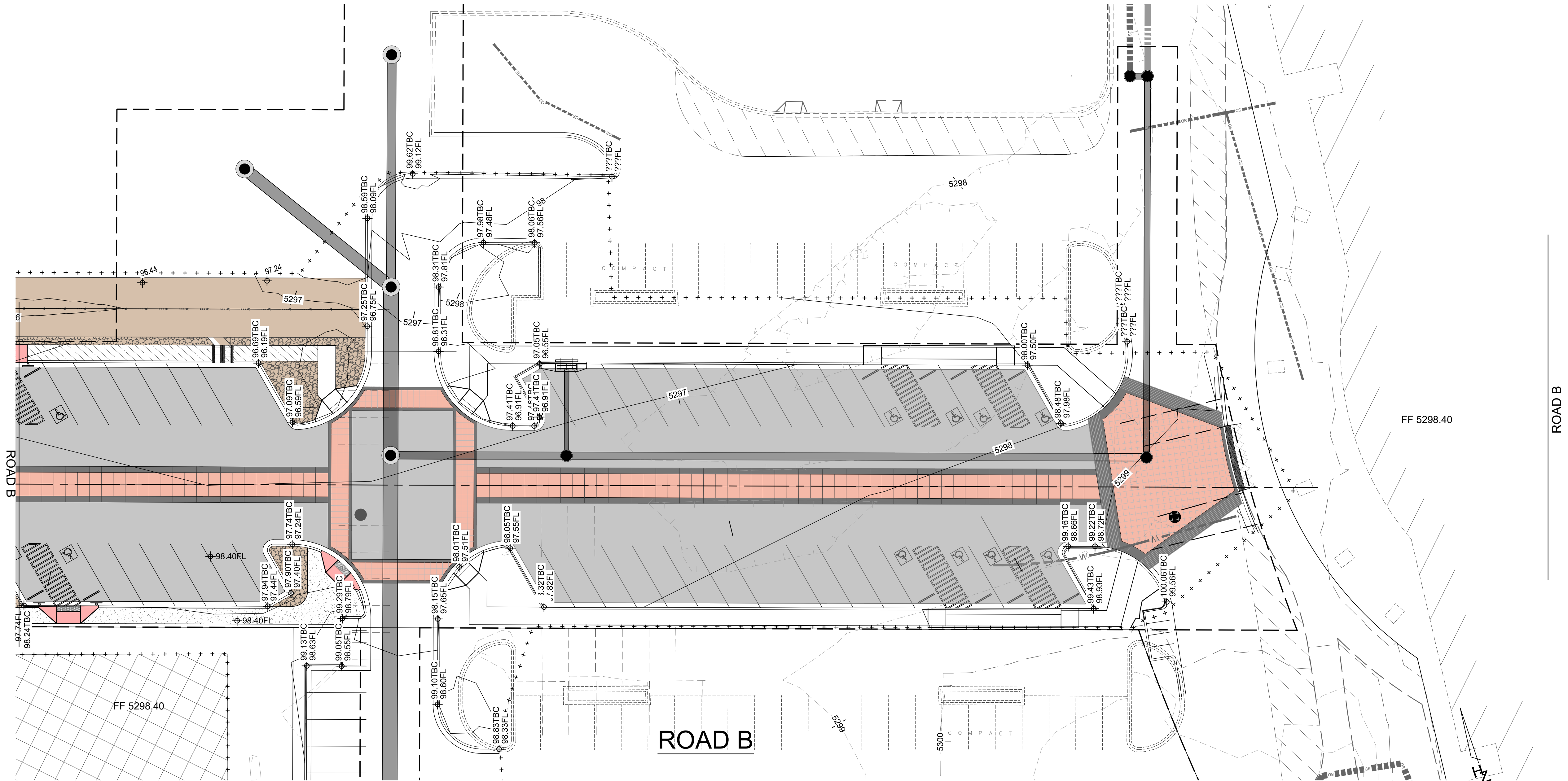






[illegible]

Plotted: 7/20/2019 3:45:20 PM, By: Edingra, Scott  
Last Saved: 7/20/2019 3:45:27 PM, eadecg  
Title: 20-22 GRADING PLAN.dwg  
User: scott.edingra  
Path: C:\Users\scott.edingra\AppData\Local\Temp\TID\10 CAD & BIM\10.1 AutoCAD\Sheet Set\20-22 GRADING PLAN.dwg



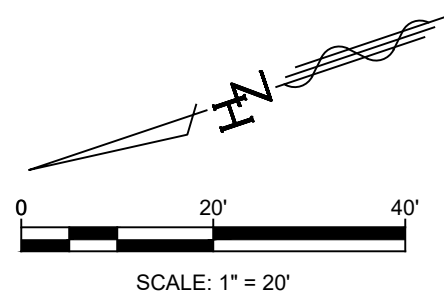
SCALE: 1" = 20'



Designed By:  
**HUITT-ZOLLARS**  
Huitt-Zollars, Inc. Albuquerque  
6501 Americas Pkwy NE, Suite 550  
Albuquerque, New Mexico 87110  
Phone (505) 883-8114 Fax (505) 883-5022

| WINROCK PARTNERS, LLC.<br>WINROCK TOWN CENTER<br>PHASE B ROAD B EXTENSION |              |               |             |
|---------------------------------------------------------------------------|--------------|---------------|-------------|
| TITLE:<br>GRADING PLAN                                                    |              |               |             |
| Design Review Committee                                                   |              | City Engineer |             |
| Last Update                                                               |              | Mo./Day/Yr.   | Mo./Day/Yr. |
|                                                                           |              |               |             |
|                                                                           |              |               |             |
|                                                                           |              |               |             |
| City Project No.                                                          | Zone Map No. | Sheet         | Of          |
| 4553.90                                                                   | J-19-Z       | 22            | 51          |

| ENGINEER'S SEAL                  |  | SURVEY INFORMATION  |    | BENCH MARKS                       |                                                               | AS BUILT INFORMATION      |      |
|----------------------------------|--|---------------------|----|-----------------------------------|---------------------------------------------------------------|---------------------------|------|
|                                  |  | NO.                 | BY | DATE                              | FOUND MONUMENT "20" H"                                        | CONTRACTOR                | DATE |
|                                  |  |                     |    |                                   | STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)                | WORK STAKED BY            | DATE |
|                                  |  |                     |    |                                   | NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE N.A.D. 1983) | INSPECTOR'S FIELD NAME BY | DATE |
|                                  |  |                     |    |                                   | N+1,483,154.978<br>E+1,545,048.270                            | VERIFICATION BY           | DATE |
| DESIGNED BY: SAE                 |  | DATE: June 28, 2019 |    | PUBLISHED EL=+3283.22 (NAVD 1988) |                                                               | MICRO-FILM INFORMATION    |      |
| DRAWN BY: LRT                    |  | DATE: June 28, 2019 |    | GROUND TO GRID FACTOR=0.99861580  |                                                               | RECORDED BY               |      |
| DWG NAME: 20-22 GRADING PLAN.dwg |  | PROJ #: R303695.04  |    | DELTA ALPHA ANGLE=0°11'00.11"     |                                                               | NO.                       |      |
| CHECKED BY: SAE                  |  | DATE: June 28, 2019 |    |                                   |                                                               |                           |      |





WINROCK PARTNERS, LLC.  
WINROCK TOWN CENTER  
PHASE B ROAD B EXTENSION

TITLE: SWQ POND SECTION

|                         |  |               |  |             |             |             |
|-------------------------|--|---------------|--|-------------|-------------|-------------|
| Design Review Committee |  | City Engineer |  | Last Update | Mo./Day/Yr. | Mo./Day/Yr. |
|                         |  |               |  |             |             |             |
|                         |  |               |  |             |             |             |
|                         |  |               |  |             |             |             |
|                         |  |               |  |             |             |             |
|                         |  |               |  |             |             |             |
| City Project No.        |  | Zone Map No.  |  | Sheet       | Of          |             |
| 4553.90                 |  | J-19-Z        |  | 24          | 51          |             |

| SURVEY INFORMATION |             |  | BENCH MARKS |                                                               |            | AS BUILT INFORMATION |                         |      |
|--------------------|-------------|--|-------------|---------------------------------------------------------------|------------|----------------------|-------------------------|------|
| NO.                | FIELD NOTES |  | DATE        | FOUND MONUMENT "20 118"                                       | CONTRACTOR | DATE                 | DRAWINGS<br>CONTRACT BY | DATE |
|                    | BY          |  |             |                                                               |            |                      |                         |      |
|                    |             |  |             | STANDARD 3 1/4" ALUMINUM DISC (FOUND IN PLACE)                |            |                      | INSPECTORS<br>BY        |      |
|                    |             |  |             | NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE N.A.D. 1983) |            |                      | ACCEPTANCE BY           |      |
|                    |             |  |             | N=1,493,154.978                                               |            |                      | VERIFICATION BY         |      |
|                    |             |  |             | E=1,545,048.210                                               |            |                      |                         |      |
|                    |             |  |             | PUBLISHED EL=-5283.22 (NAD 1988)                              |            |                      |                         |      |
|                    |             |  |             | GROUND TO GRID FACTOR=0.99986180                              |            |                      |                         |      |
|                    |             |  |             | DELTA ALPHA ANGLE=0°11'00.11"                                 |            |                      | RECORDED BY             |      |
|                    |             |  |             |                                                               |            |                      | NO.                     |      |
|                    |             |  |             |                                                               |            |                      |                         |      |

| NO.                               |  | DATE                | REMARKS | BY |
|-----------------------------------|--|---------------------|---------|----|
| REVISIONS                         |  |                     |         |    |
| DESIGN                            |  |                     |         |    |
| DESIGNED BY: SAE                  |  | DATE: June 28, 2019 |         |    |
| DRAWN BY: LRT                     |  | DATE: June 28, 2019 |         |    |
| DWG NAME: 20-22 GRINDING PLAN.dwg |  | PROJ.#: R3036989.04 |         |    |
| CHECKED BY: SAE                   |  | DATE: June 28, 2019 |         |    |

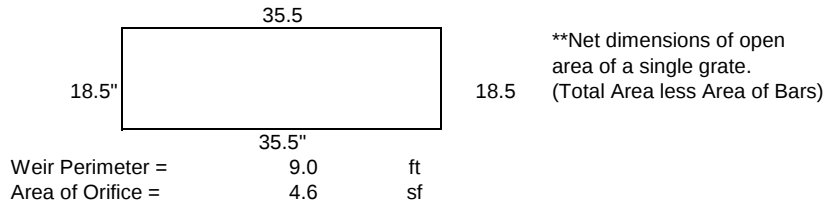
| Winrock Town Center Road B Extension<br>Inlet Calculation Summary |               |                  |                                       |                     |                   |                     |                            |                   |                                                                                      |
|-------------------------------------------------------------------|---------------|------------------|---------------------------------------|---------------------|-------------------|---------------------|----------------------------|-------------------|--------------------------------------------------------------------------------------|
| Storm Drain System                                                | Basin         | Basin Q<br>(cfs) | Actual Q<br>(at<br>Analysis<br>Point) | Inlet Type          | Q Inflow<br>(cfs) | Q 2x100-yr<br>(cfs) | Inlet<br>Capacity<br>(cfs) | Q Bypass<br>(cfs) | Notes                                                                                |
| AP-D                                                              | SW Culverts   | 6.8              | 6.8                                   | Two-4' SW Culverts  | 6.8               | N/A                 | 8.7                        | 0.0               | Broad-crested Weir Calculation assumes Depth of Flow at Top of Curb                  |
| AP-D                                                              | SW Culverts 1 | 10.5             | 10.5                                  | Two-4' SW Culverts  | 10.5              | N/A                 | 11.4                       | 0.0               | Broad-crested Weir Calculation assumes Depth of Flow at Top of Curb + 0.1'           |
| AP-D                                                              | First Flush   | 3.4              | 20.7                                  | Pond Inlet          | 20.7              | N/A                 | 26.3                       | 0.0               | Assumes H=2.2' at Top of Pond Elevation, Refer to Pond Rating Curve                  |
| AP-D                                                              | MH 7A         | 1.3              | 1.3                                   | Two-Double C Inlets | 1.3               | 2.6                 | 46.0                       | 0.0               | Sump inlets capture all contributing flow. No bypass flow. Refer to Inlet Worksheet. |
| AP-B                                                              | MH 9A1        | 4.6              | 4.6                                   | Existing Pipe Flow  | 4.6               | N/A                 | N/A                        | 0.0               | Existing Pipe Flow. No Inlets Required.                                              |
| AP-B                                                              | Inlet 8C      | 7.6              | 7.6                                   | Double C            | 7.6               | 15.2                | 23.0                       | 0.0               | Sump inlets capture all contributing flow. No bypass flow. Refer to Inlet Worksheet. |
| AP-B                                                              | Inlet 4B      | 5.8              | 5.8                                   | Double C            | 5.8               | 11.6                | 23.0                       | 0.0               | Sump inlets capture all contributing flow. No bypass flow. Refer to Inlet Worksheet. |
| AP-B                                                              | MH 7          | 7.5              | 7.5                                   | Future Inlets       | 7.5               | 15.0                | N/A                        | 0.0               | Assumes future inlets to be designed in sump condition. No bypass flow.              |
| AP-B                                                              | MH 6          | 48.1             | 48.1                                  | Future Pond Inlet   | 48.1              | N/A                 | N/A                        | 0.0               | Pond and inlet to be designed with future construction phase.                        |

## Inlet Worksheet (Sump Condition) for Road B Extension

Objective: Design a Type C Inlet in Sump Condition for a 100-year flow

- 1 Inlet to collect peak flow amount before overtopping headwall.

- 2 Grate Dimensions



- 3 Calculate Orifice and Weir Flow into Grate at Design Depth

| Orifice Equation                                                                                                                                                                                 | Weir Equation                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| $Q = 0.6 \times A \times (2 \times g \times h)^{1/2}$<br>Where<br>$A = 4.6 \text{ sq. ft.}$<br>$g = 32.2 \text{ ft}^2/\text{sec}$<br>$h = 0.5 \text{ ft}$<br>Therefore<br>$Q = 15.5 \text{ cfs}$ | $Q = 2.65 \times P \times H^{3/2}$<br>Where<br>$P = 9.0 \text{ ft}$<br>$H = 0.5 \text{ ft}$<br>Therefore<br>$Q = 16.9 \text{ cfs}$ |

Orifice Equation controls

Grate Capacity = 15.5 cfs

- 4 Apply 25% Clogging Factor to determine allowable design flow into inlet

$$15.5 \times 0.75 = 12 \text{ cfs}$$

|                                                          |        |
|----------------------------------------------------------|--------|
| Therefore Capacity of Single C Inlet in Sump Condition = | 12 cfs |
|----------------------------------------------------------|--------|

|                                                |        |
|------------------------------------------------|--------|
| Capacity of Double C Inlet in Sump Condition = | 23 cfs |
|------------------------------------------------|--------|

---

## Worksheet for Broad Crested Weir - Sidewalk Culverts

---

### Project Description

Solve For                                      Discharge

### Input Data

|                     |       |      |    |
|---------------------|-------|------|----|
| Headwater Elevation |       | 0.50 | ft |
| Crest Elevation     |       | 0.00 | ft |
| Tailwater Elevation |       | 0.00 | ft |
| Crest Surface Type  | Paved |      |    |
| Crest Breadth       |       | 1.00 | ft |
| Crest Length        |       | 4.00 | ft |

### Results

|                              |      |                    |
|------------------------------|------|--------------------|
| Discharge                    | 4.37 | ft <sup>3</sup> /s |
| Headwater Height Above Crest | 0.50 | ft                 |
| Tailwater Height Above Crest | 0.00 | ft                 |
| Weir Coefficient             | 3.09 | US                 |
| Submergence Factor           | 1.00 |                    |
| Adjusted Weir Coefficient    | 3.09 | US                 |
| Flow Area                    | 2.00 | ft <sup>2</sup>    |
| Velocity                     | 2.18 | ft/s               |
| Wetted Perimeter             | 5.00 | ft                 |
| Top Width                    | 4.00 | ft                 |

## Rating Curve for Broad Crested Weir - Sidewalk Culverts

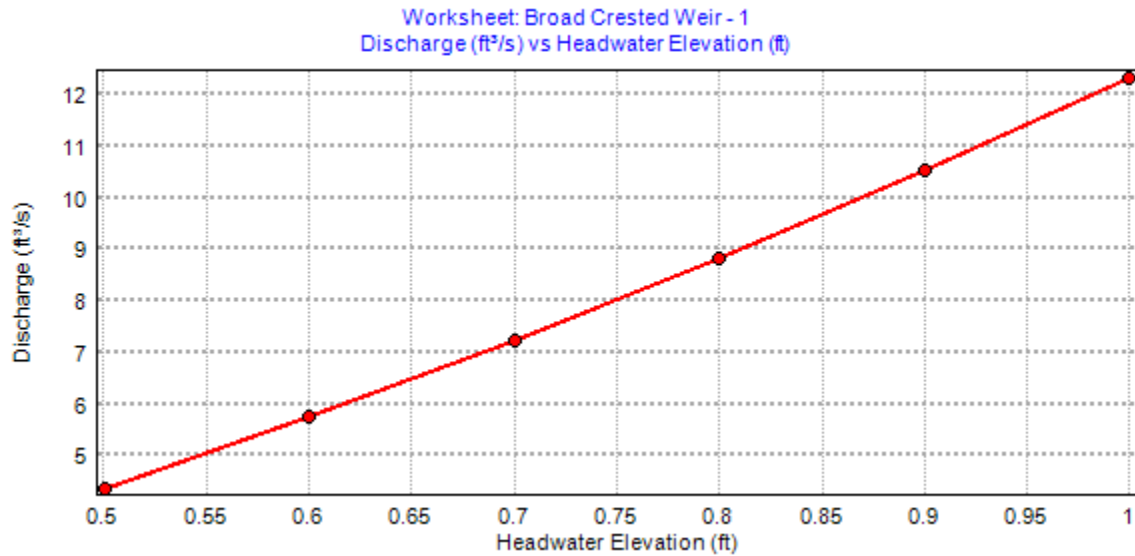
### Project Description

Solve For Discharge

### Input Data

|                     |       |    |
|---------------------|-------|----|
| Headwater Elevation | 0.50  | ft |
| Crest Elevation     | 0.00  | ft |
| Tailwater Elevation | 0.00  | ft |
| Crest Surface Type  | Paved |    |
| Crest Breadth       | 1.00  | ft |
| Crest Length        | 4.00  | ft |

### Rating Curve Plot



**Winrock Town Center Road B Extension  
Proposed Pond Rating Curve: First Flush Facility  
July 2019**

| Depth<br>(ft) | Area    |       | Volume<br>(ac-ft) | Cum. Volume<br>(ac-ft) | Outlet Pipe<br>(CFS) | Pond Inlet<br>(CFS) |
|---------------|---------|-------|-------------------|------------------------|----------------------|---------------------|
|               | (sq ft) | (ac)  |                   |                        |                      |                     |
| 5293.8        | 1503.4  | 0.035 | 0                 | 0                      | 43.9                 | 0                   |
| 5294          | 1614.8  | 0.037 | 0.007             | 0.007                  | 45.1                 | 7.9                 |
| 5295          | 2195.6  | 0.050 | 0.044             | 0.051                  | 51.0                 | 19.4                |
| 5296          | 2815.6  | 0.065 | 0.058             | 0.108                  | 56.2                 | 26.3                |

Pond Inlet = Neenah Grate R-4353  
30" Outlet Pipe Invert = 5289.10

Top of Pond = 5296  
Bottom of Pond = 5293.8  
Maximum Water Surface Elevation = 5295.2



File name

Display curve

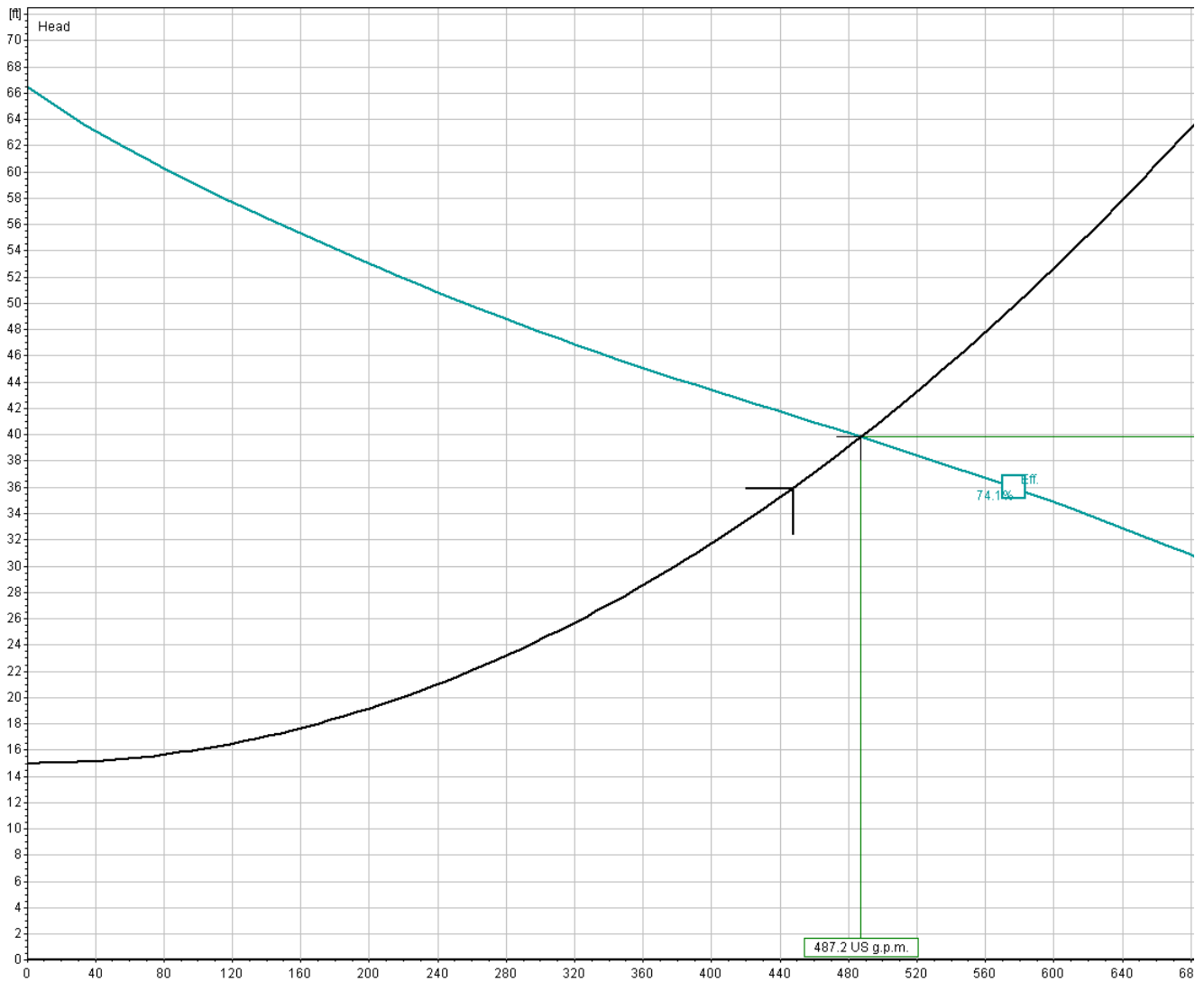
3 results  
Flow: 448 US g.p.m.  
Static head: 15 ft  
Pipe system: NoEdit

Xylet  
Program version  
47.0 - 4/10/2019 (Build 391)  
Last update (Data)  
5/15/2019 14:41 A5P5

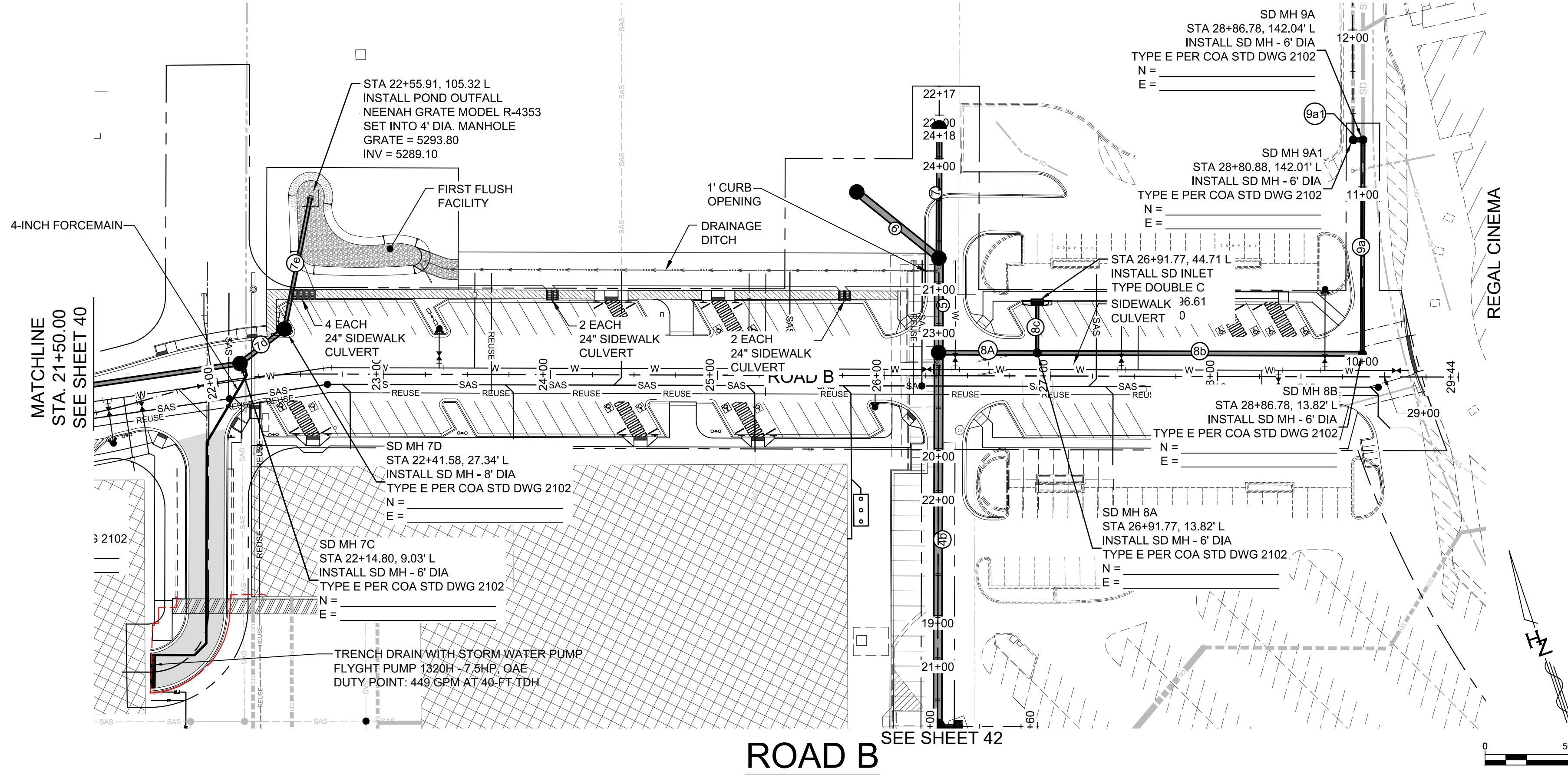
Spaix® is a registered trademark of VSX - VOGEL SOFTWARE GmbH. 

| Product                                                                                             | Diff.<br>[%] | Q<br>[US g.p.m.] | Spec. Energy<br>[kWh/US MG] | $\eta$<br>[%] | n<br>[rpm] | Rate<br>[         |
|-----------------------------------------------------------------------------------------------------|--------------|------------------|-----------------------------|---------------|------------|-------------------|
|  1320H Non-clog 3~ | 8.8          | 487.2            | 204                         | 72.9          | 1440       | 7.9 3 15/16 2     |
|  1320M Non-clog 3~ | 1.3          | 453.9            | 210                         | 64.8          | 1440       | 7.9 3 15/16 2     |
|  1320S Non-clog 3~ | 2.8          | 460.4            | 281                         | 47.2          | 2900       | 10.1 3 1/8 2 25.1 |

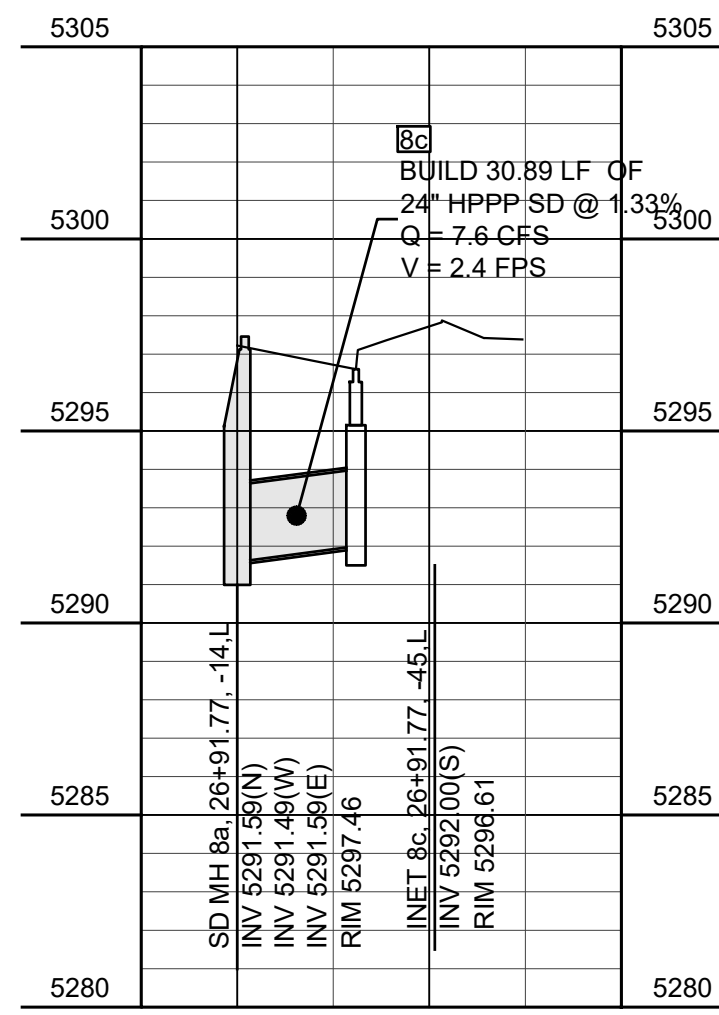
**1320H-4X.453.S41.230**





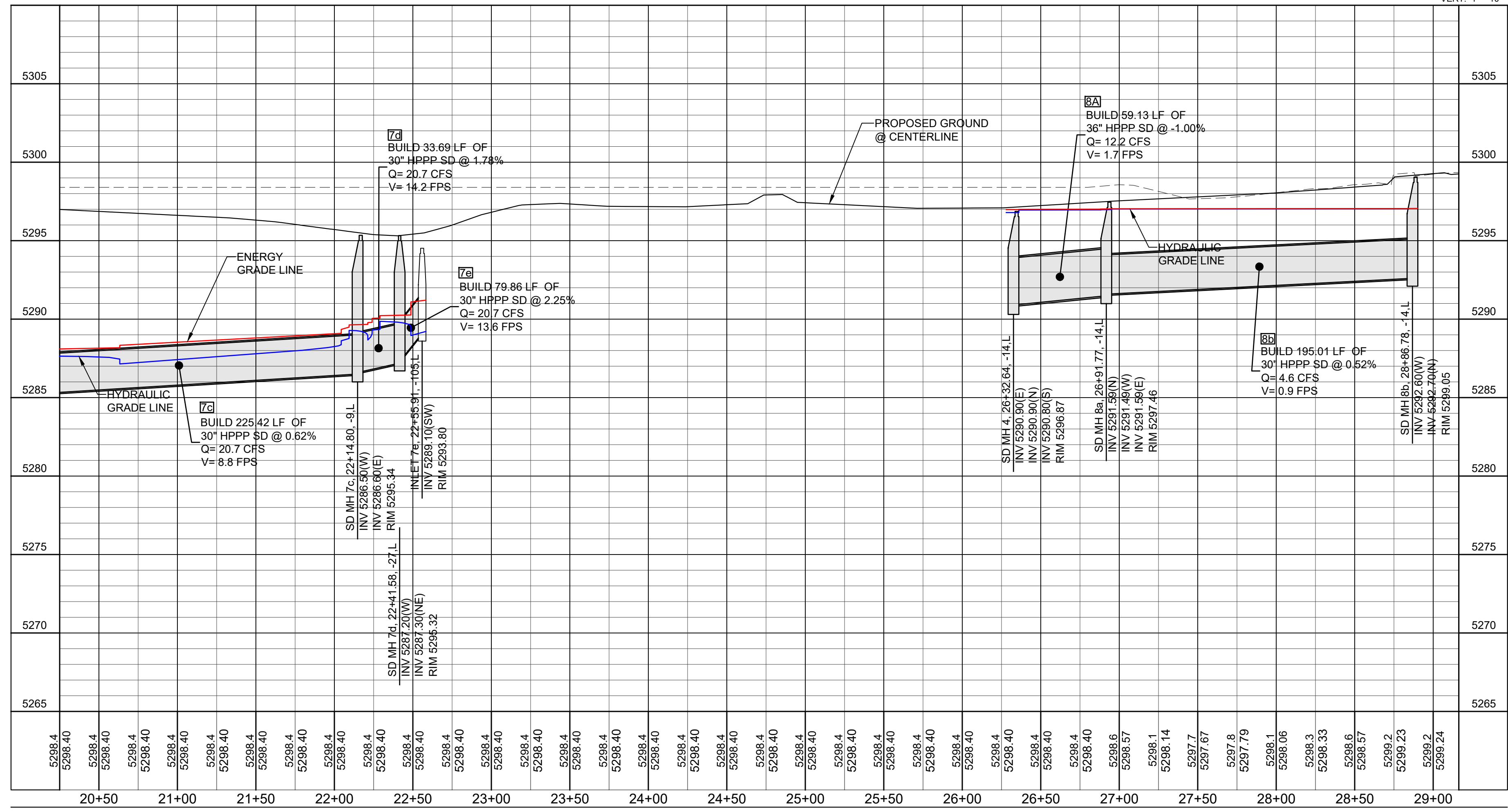
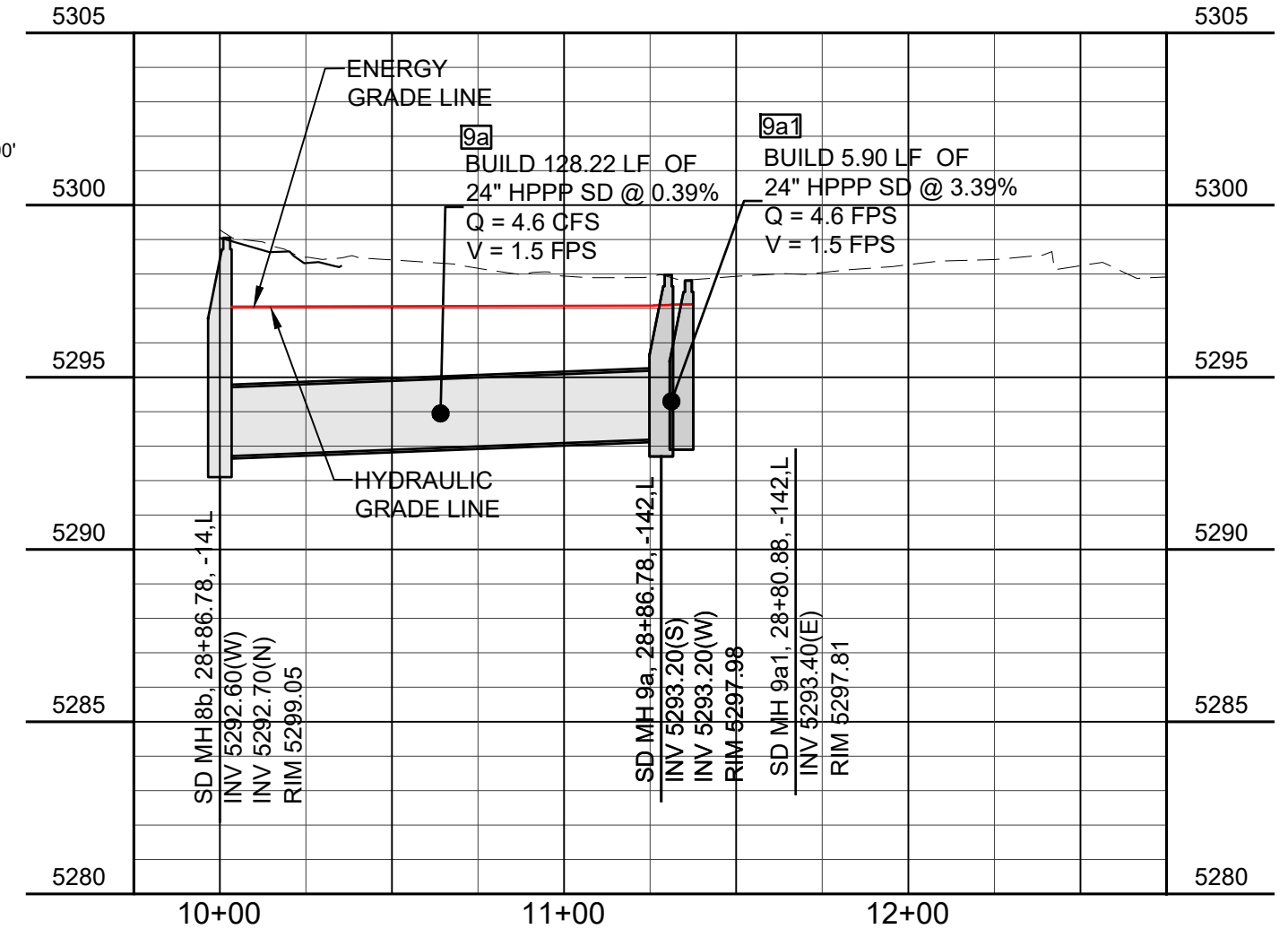


### SD INLET



| STORM DRAIN DATA |           |               |         |        |
|------------------|-----------|---------------|---------|--------|
| PIPE             | PIPE SIZE | BEARING       | LENGTH  | SLOPE  |
| 7c               | 30"       | S79° 40' 45"E | 225.42' | 0.62%  |
| 7d               | 30"       | N70° 41' 57"E | 33.69'  | 1.78%  |
| 7e               | 30"       | N29° 46' 27"E | 79.86'  | 2.25%  |
| 8a               | 36"       | S71° 16' 29"E | 59.13'  | -1.00% |
| 8b               | 30"       | S71° 16' 29"E | 195.01' | 0.52%  |
| 8c               | 24"       | N18° 43' 31"E | 30.89'  | 1.33%  |
| 9a               | 24"       | N18° 43' 31"E | 128.22' | 0.39%  |
| 9a1              | 24"       | S71° 37' 35"E | 5.90'   | 3.39%  |

### STORM DRAIN 9a & 9b



Designed By:  
**HUITT-ZOLLARS**  
Huitt-Zollars, Inc. Albuquerque  
6501 Americas Pkwy NE, Suite 550  
Albuquerque, New Mexico 87110  
Phone (505) 883-8114 Fax (505) 883-5022

**WINROCK PARTNERS, LLC.**  
WINROCK TOWN CENTER  
PHASE B ROAD B EXTENSION

TITLE:  
**ROAD B  
ROAD B STORM DRAIN PLAN & PROFILE  
STA. 21+50.00 TO STA. 29+16.00**

|                         |               |             |             |
|-------------------------|---------------|-------------|-------------|
| Design Review Committee | City Engineer | Mo./Day/Yr. | Mo./Day/Yr. |
|                         |               |             |             |
|                         |               |             |             |
|                         |               |             |             |
|                         |               |             |             |
| City Project No.        | Zone Map No.  | Sheet       | Of          |
| 4553.90                 | J-19-Z        | 41          | 51          |

AS BUILT INFORMATION

BENCH MARKS

SURVEY INFORMATION

ENGINEER'S SEAL

REVISIONS

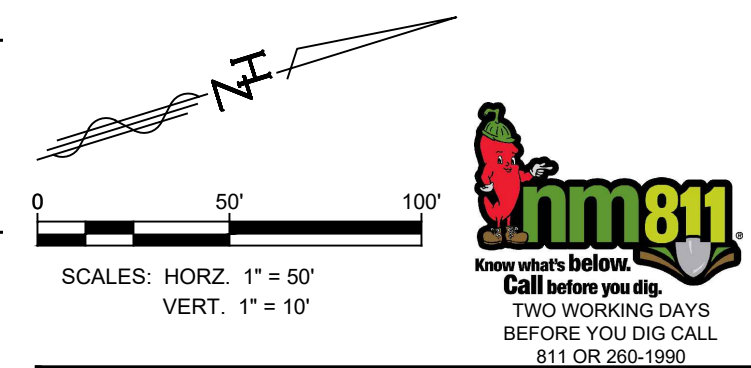
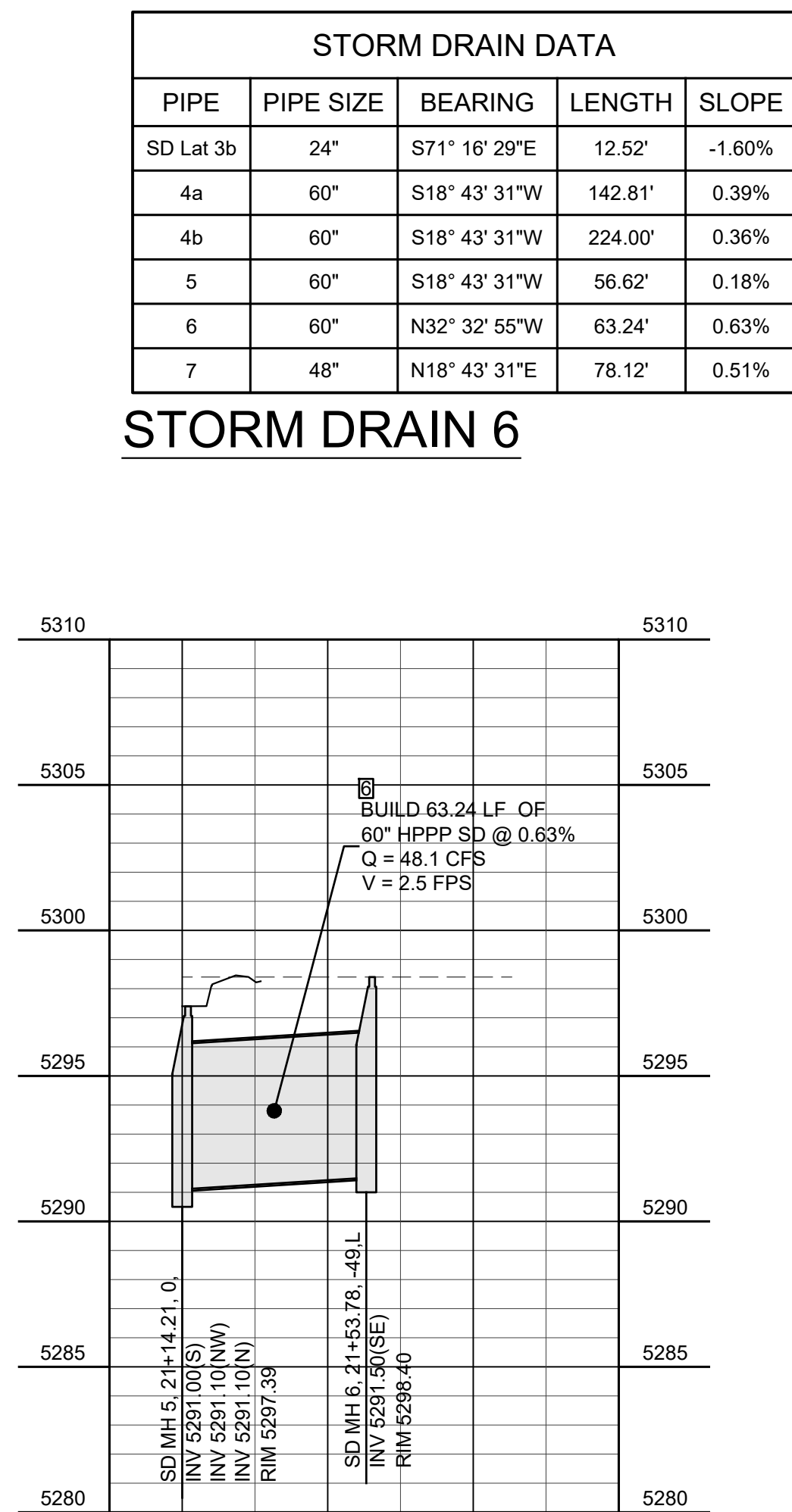
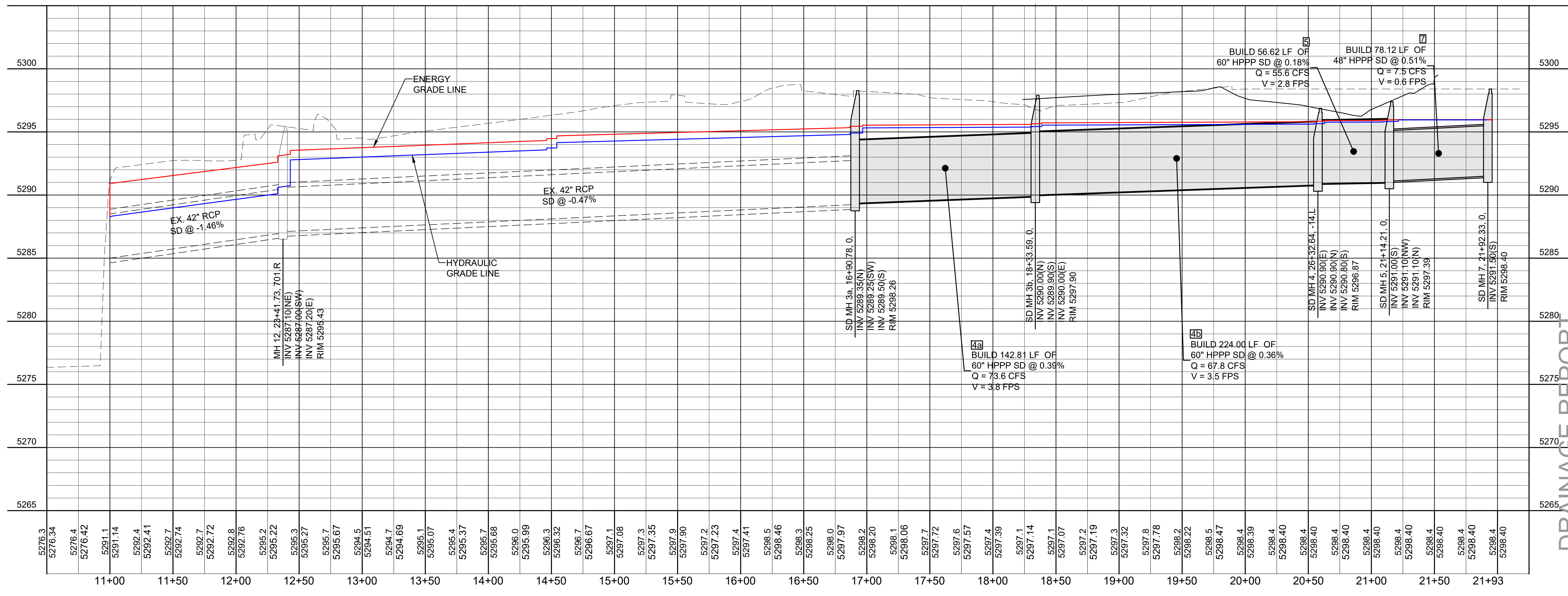
DESIGN

DATE: June 28, 2019

DATE: June 28, 2019

PROJ #: R303698.04

DATE: June 28, 2019



Designed By:

**HUITT-ZOLLARS**  
Huitt-Zollars, Inc. Albuquerque  
6501 Americas Pkwy NE, Suite 550  
Albuquerque, New Mexico 87110  
Phone (505) 883-8114 Fax (505) 883-5022

WINROCK PARTNERS, LLC.  
WINROCK TOWN CENTER  
PHASE B ROAD B EXTENSION

|        |                                                                        |
|--------|------------------------------------------------------------------------|
| TITLE: | ROAD B<br>STORM DRAIN PLAN & PROFILE<br>STA. 10+00.00 TO STA. 21+50.00 |
|--------|------------------------------------------------------------------------|

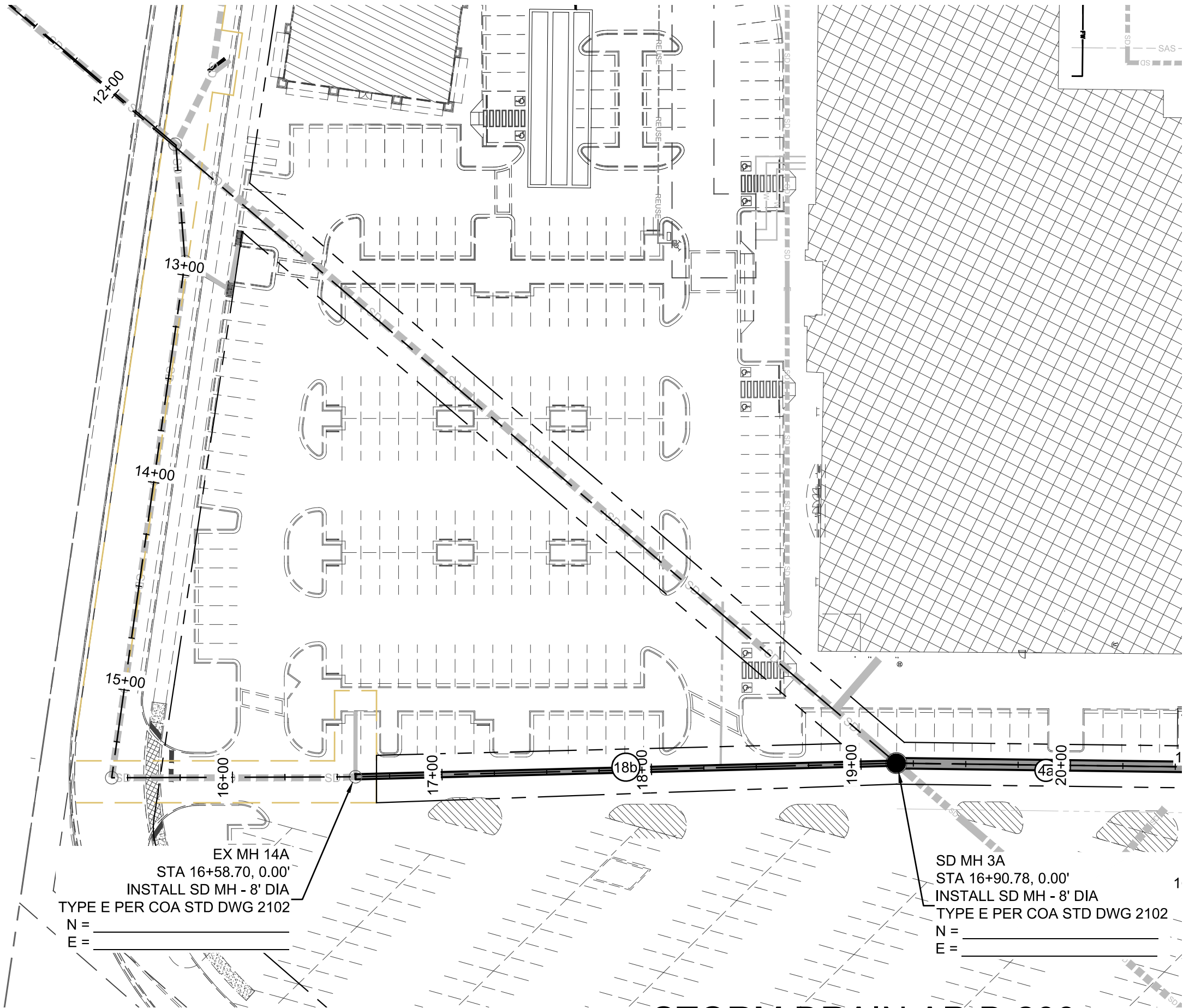
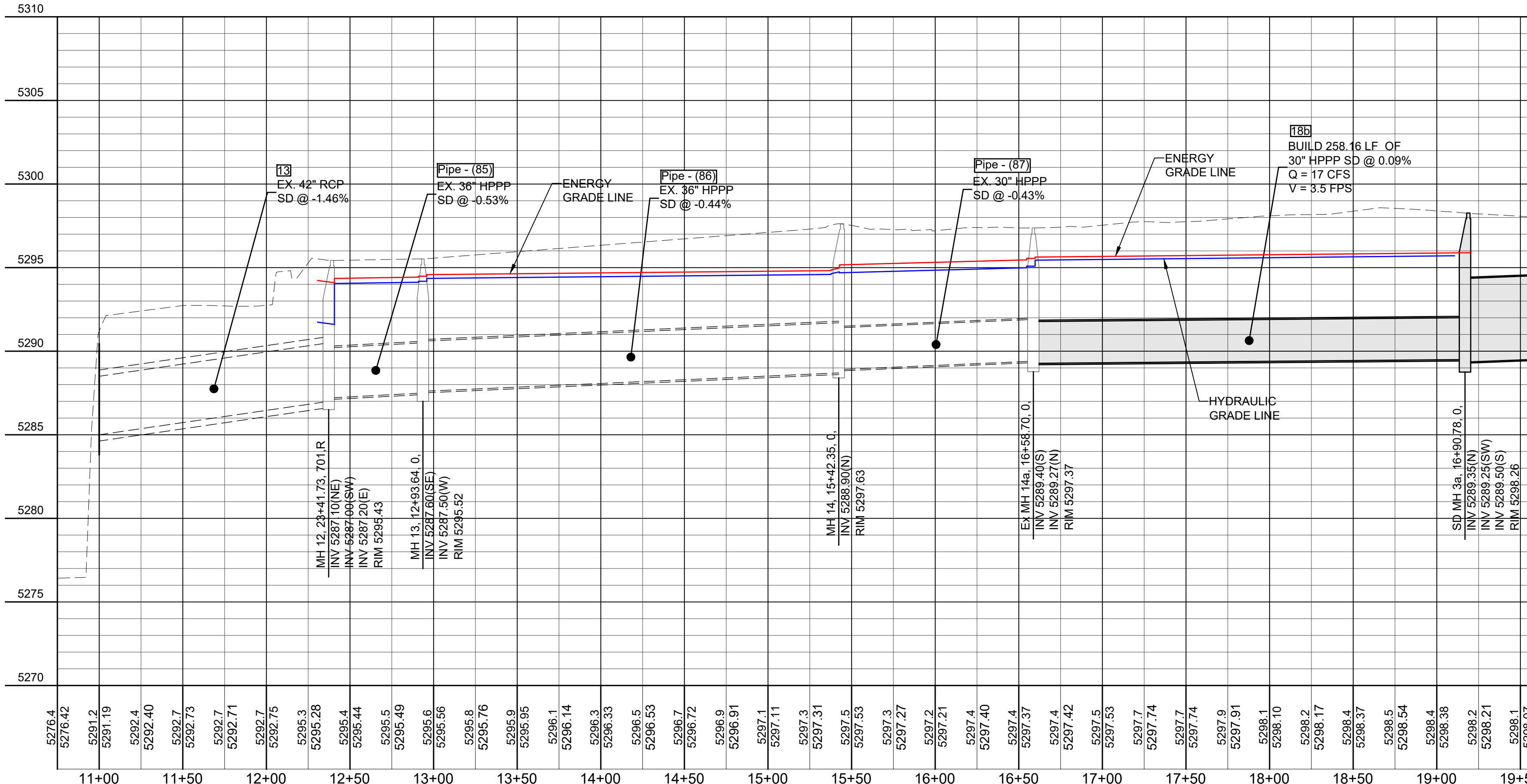
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|---------------------------------------------------------------------------------------|-------------------------|---------------|-------------|-------------|-------------|
|  | Design Review Committee | City Engineer | Last Update | Mo./Day/Yr. | Mo./Day/Yr. |
|                                                                                       |                         |               |             |             |             |
|                                                                                       |                         |               |             |             |             |
|                                                                                       |                         |               |             |             |             |
|                                                                                       |                         |               |             |             |             |
|                                                                                       |                         |               |             |             |             |
| City Project No.<br>4553.90                                                           | Zone Map No.<br>J-19-Z  |               | Sheet       | 42          | Of<br>51    |

| ENGINEER'S SEAL                                                                                | SURVEY INFORMATION |    |      | BENCH MARKS                                                   | AS BUILT INFORMATION     |      |
|------------------------------------------------------------------------------------------------|--------------------|----|------|---------------------------------------------------------------|--------------------------|------|
|                                                                                                | FIELD NOTES        |    |      |                                                               |                          |      |
| <br>7/5/19 | NO.                | BY | DATE | FOUND MONUMENT "20-1H8"                                       | WORK<br>CORRECTED BY     | DATE |
|                                                                                                |                    |    |      | STANDARD 3/14" ALUMINUM DISC FOUND IN PLACE)                  | INSPECTOR BY             | DATE |
|                                                                                                |                    |    |      | NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE-N.A.D. 1983) | ACCEPTANCE BY            | DATE |
|                                                                                                |                    |    |      | N=1 493.154.978                                               | FIELD VERIFICATION BY    | DATE |
|                                                                                                |                    |    |      | E=1 545.048.210                                               | DRAWINGS<br>CORRECTED BY | DATE |
|                                                                                                |                    |    |      | PUBLISHED EL.=9385.22 (NAVD 1988)                             | MICRO-FILM INFORMATION   |      |
|                                                                                                |                    |    |      | GROUND TO GRID FACTOR=0.995861980                             | RECORDED BY              | DATE |
|                                                                                                |                    |    |      | DELTA ALPHA ANGLE=-0°1'03.11"                                 | NO                       |      |

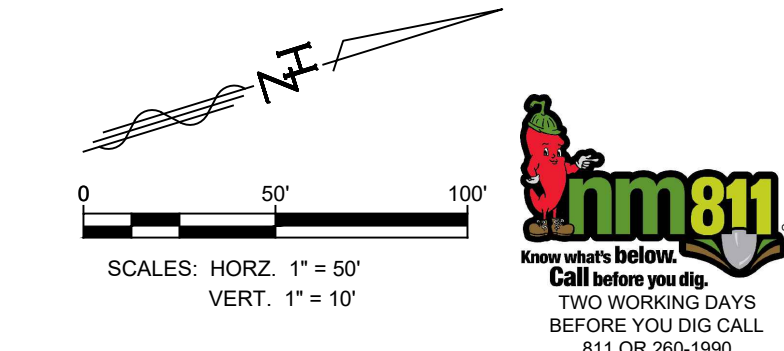
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Last Saved: 7/25/2019 11:11:13 PM, eding, Scott  
Title: TCD 10 CAD & BMD 10.1 AutoCAD Sheet Set 38-40 SD PP.dwg



STORM DRAIN AP-B-200



Designed By:  
**HUITT-ZOLLARS**  
Huitt-Zollars, Inc. Albuquerque  
6501 Americas Pkwy NE, Suite 550  
Albuquerque, New Mexico 87110  
Phone (505) 883-8114 Fax (505) 883-5022

|                                                                           |                        |             |             |
|---------------------------------------------------------------------------|------------------------|-------------|-------------|
| WINROCK PARTNERS, LLC.<br>WINROCK TOWN CENTER<br>PHASE B ROAD B EXTENSION |                        |             |             |
| TITLE:<br>ROAD B<br>STORM DRAIN<br>STA. 10+00.00 TO STA. 21+50.00         |                        |             |             |
| Design Review Committee                                                   | City Engineer          | Mo./Day/Yr. | Mo./Day/Yr. |
| Last Update                                                               |                        |             |             |
|                                                                           |                        |             |             |
|                                                                           |                        |             |             |
|                                                                           |                        |             |             |
| City Project No.<br>4553.90                                               | Zone Map No.<br>J-19-Z | Sheet<br>43 | Of<br>51    |

| STORM DRAIN DATA |           |               |         |        |
|------------------|-----------|---------------|---------|--------|
| PIPE             | PIPE SIZE | BEARING       | LENGTH  | SLOPE  |
| Pipe - (87)      | 30"       | N17° 46' 54"E | 116.36' | -0.43% |
| Pipe - (86)      | 36"       | S63° 54' 18"E | 248.70' | -0.44% |
| Pipe - (85)      | 36"       | S76° 54' 50"E | 56.22'  | -0.53% |
| 13               | 42"       | S58° 08' 25"W | 137.25' | -1.46% |
| 18b              | 30"       | N16° 33' 24"E | 258.16' | 0.09%  |

STORM DRAIN AP-B-200

| SURVEY INFORMATION |    | BENCH MARKS |                                                               | AS BUILT INFORMATION   |      |
|--------------------|----|-------------|---------------------------------------------------------------|------------------------|------|
| NO.                | BY | DATE        | FOUND MONUMENT "20" H18"                                      | CONTRACTOR             | DATE |
|                    |    |             | STANDARD 3.14" ALUMINUM DISC (FOUND IN PLACE)                 | INSPECTOR'S            | DATE |
|                    |    |             | NEW MEXICO STATE PLANE COORDINATES (CENTRAL ZONE N.A.D. 1983) | FIELD CHECK BY         | DATE |
|                    |    |             | N+1,483,154.978                                               | VERIFICATION BY        | DATE |
|                    |    |             | E+1,545,048.210                                               | CORRECTED BY           | DATE |
|                    |    |             | PUBLISHED EL.=5283.22 (NAD 1988)                              | MICRO-FILM INFORMATION |      |
|                    |    |             | GROUND TO GRID FACTOR=0.99861580                              | RECORDED BY            | DATE |
|                    |    |             | DELTA ALPHA ANGLE=+0°11'00.11"                                | NO.                    |      |

|                 |                           |                     |         |    |
|-----------------|---------------------------|---------------------|---------|----|
| ENGINEER'S SEAL | REVISIONS                 | DATE                | REMARKS | BY |
|                 | NO.                       | DATE                |         |    |
|                 | DESIGNED BY: SAE          | DATE: June 28, 2019 |         |    |
|                 | DRAWN BY: LRT             | DATE: June 28, 2019 |         |    |
|                 | DWG NAME: 38-40 SD PP.dwg | PROJ #: R303695.04  |         |    |
| CHECKED BY: SAE | DATE: June 28, 2019       |                     |         |    |

Storm Drain System: AP-B  
Conduit FlexTable: Combined Pipe/Node Report

| Label    | Start Node | Stop Node | Diameter<br>(in) | Length<br>(ft) | Flow<br>(cfs) | Velocity<br>(ft/s) | Invert (Start)<br>(ft) | Invert (Stop)<br>(ft) | Elevation<br>Ground (Start)<br>(ft) | Elevation<br>Ground (Stop)<br>(ft) | Hydraulic Grade<br>Line (In)<br>(ft) | Hydraulic Grade Line<br>(Out)<br>(ft) | Energy Grade Line (In)<br>(ft) | Energy Grade Line<br>(Out)<br>(ft) |
|----------|------------|-----------|------------------|----------------|---------------|--------------------|------------------------|-----------------------|-------------------------------------|------------------------------------|--------------------------------------|---------------------------------------|--------------------------------|------------------------------------|
| LINE 15  | INLET      | MH 17     | 36.0             | 44.2           | 22.0          | 3.11               | 5,289.13               | 5,288.93              | 5,295.50                            | 5,295.17                           | 5,295.18                             | 5,295.15                              | 5,295.33                       | 5,295.30                           |
| LINE 14  | MH 17      | MH 16     | 36.0             | 215.3          | 22.0          | 3.11               | 5,288.93               | 5,288.29              | 5,295.17                            | 5,297.58                           | 5,295.00                             | 5,294.86                              | 5,295.15                       | 5,295.01                           |
| LINE 13  | MH 16      | MH 22     | 36.0             | 162.0          | 22.0          | 3.11               | 5,288.29               | 5,287.90              | 5,297.58                            | 5,294.70                           | 5,294.77                             | 5,294.67                              | 5,294.92                       | 5,294.82                           |
| LINE 12  | MH 22      | MH 10     | 24.0             | 40.0           | 22.0          | 3.50               | 5,287.90               | 5,287.68              | 5,294.70                            | 5,294.68                           | 5,294.53                             | 5,294.47                              | 5,294.72                       | 5,294.66                           |
| LINE 11  | MH 10      | MH 11     | 36.0             | 106.0          | 22.0          | 3.11               | 5,287.68               | 5,287.40              | 5,294.68                            | 5,295.02                           | 5,294.35                             | 5,294.28                              | 5,294.50                       | 5,294.43                           |
| LINE 10  | MH 11      | MH 12     | 36.0             | 39.3           | 24.0          | 3.40               | 5,287.40               | 5,287.22              | 5,295.02                            | 5,295.73                           | 5,294.15                             | 5,294.12                              | 5,294.33                       | 5,294.30                           |
| CO-42    | CB-41      | MH 2      | 24.0             | 156.1          | 5.0           | 1.59               | 5,290.00               | 5,288.18              | 5,297.66                            | 5,296.20                           | 5,295.49                             | 5,295.45                              | 5,295.53                       | 5,295.49                           |
| CO-41    | CB-40      | MH 2      | 24.0             | 153.8          | 5.0           | 1.59               | 5,290.00               | 5,288.18              | 5,297.30                            | 5,296.20                           | 5,295.49                             | 5,295.45                              | 5,295.53                       | 5,295.49                           |
| CO-61    | INLET 4B   | MH 3B     | 24.0             | 12.5           | 5.8           | 1.85               | 5,290.00               | 5,289.90              | 5,297.41                            | 5,297.90                           | 5,296.62                             | 5,296.61                              | 5,296.67                       | 5,296.66                           |
| LINE 8C  | INLET 8C   | MH 8A     | 24.0             | 31.0           | 7.6           | 2.42               | 5,292.00               | 5,291.49              | 5,296.60                            | 5,297.46                           | 5,296.86                             | 5,296.84                              | 5,296.95                       | 5,296.93                           |
| LINE 9B  | MH 9A1     | MH 9A     | 24.0             | 5.9            | 4.6           | 1.46               | 5,293.40               | 5,293.20              | 5,297.81                            | 5,297.80                           | 5,296.97                             | 5,296.97                              | 5,297.00                       | 5,297.00                           |
| LINE 9A  | MH 9A      | MH 8B     | 24.0             | 128.2          | 4.6           | 1.46               | 5,293.20               | 5,292.60              | 5,297.80                            | 5,299.05                           | 5,296.93                             | 5,296.90                              | 5,296.97                       | 5,296.94                           |
| LINE 8B  | MH 8B      | MH 8A     | 30.0             | 196.0          | 4.6           | 0.94               | 5,292.60               | 5,291.49              | 5,299.05                            | 5,297.46                           | 5,296.90                             | 5,296.89                              | 5,296.91                       | 5,296.90                           |
| LINE 8A  | MH 8A      | MH 4      | 36.0             | 59.1           | 12.2          | 1.73               | 5,291.49               | 5,290.80              | 5,297.46                            | 5,296.87                           | 5,296.83                             | 5,296.82                              | 5,296.87                       | 5,296.86                           |
| LINE 7   | MH 7       | MH 5      | 48.0             | 78.1           | 7.5           | 0.60               | 5,291.50               | 5,291.00              | 5,298.40                            | 5,297.40                           | 5,296.95                             | 5,296.95                              | 5,296.96                       | 5,296.95                           |
| LINE 6   | MH 6       | MH 5      | 60.0             | 63.2           | 48.1          | 2.45               | 5,291.50               | 5,291.00              | 5,298.40                            | 5,297.40                           | 5,296.91                             | 5,296.90                              | 5,297.00                       | 5,296.99                           |
| LINE 5   | MH 5       | MH 4      | 60.0             | 56.6           | 55.6          | 2.83               | 5,291.00               | 5,290.80              | 5,297.40                            | 5,296.87                           | 5,296.78                             | 5,296.77                              | 5,296.91                       | 5,296.89                           |
| LINE 4B  | MH 4       | MH 3B     | 60.0             | 224.0          | 67.8          | 3.45               | 5,290.80               | 5,289.90              | 5,296.87                            | 5,297.90                           | 5,296.62                             | 5,296.53                              | 5,296.81                       | 5,296.72                           |
| LINE 4A  | MH 3B      | MH-3A     | 60.0             | 143.0          | 73.6          | 3.75               | 5,289.90               | 5,289.50              | 5,297.90                            | 5,298.26                           | 5,296.38                             | 5,296.31                              | 5,296.60                       | 5,296.53                           |
| LINE 17  | MH 14      | MH 13     | 36.0             | 246.7          | 27.0          | 3.82               | 5,288.80               | 5,287.50              | 5,297.81                            | 5,295.78                           | 5,294.59                             | 5,294.35                              | 5,294.82                       | 5,294.58                           |
| LINE 18  | MH 19      | MH 14     | 30.0             | 117.0          | 27.0          | 5.50               | 5,289.26               | 5,288.80              | 5,297.92                            | 5,297.81                           | 5,294.99                             | 5,294.69                              | 5,295.46                       | 5,295.16                           |
| LINE 18B | MH-3A      | MH 19     | 30.0             | 258.2          | 17.0          | 0.00               | 5,289.50               | 5,289.26              | 5,298.26                            | 5,297.92                           | 5,295.71                             | 5,295.44                              | 5,295.89                       | 5,295.63                           |
| LINE 3   | MH-3A      | MH 2      | 42.0             | 241.4          | 56.6          | 5.88               | 5,289.50               | 5,288.18              | 5,298.26                            | 5,296.20                           | 5,295.80                             | 5,295.15                              | 5,296.34                       | 5,295.69                           |
| LINE 2   | MH 2       | MH 12     | 42.0             | 212.3          | 66.6          | 6.92               | 5,288.18               | 5,287.22              | 5,296.20                            | 5,295.73                           | 5,294.58                             | 5,293.78                              | 5,295.32                       | 5,294.53                           |
| LINE 1   | MH 12      | AP-B      | 42.0             | 138.0          | 121.9         | 12.67              | 5,287.22               | 5,286.00              | 5,295.73                            | 5,286.00                           | 5,291.10                             | 5,289.26                              | 5,293.60                       | 5,291.91                           |
| LINE 16  | MH 13      | MH 12     | 36.0             | 57.8           | 31.3          | 4.43               | 5,287.50               | 5,287.22              | 5,295.78                            | 5,295.73                           | 5,294.12                             | 5,294.05                              | 5,294.43                       | 5,294.35                           |

Storm Drain System: AP-D

Conduit FlexTable: Combined Pipe/Node Report

| Label   | Start Node     | Stop Node | Diameter<br>(in) | Length<br>(ft) | Flow<br>(cfs) | Velocity<br>(ft/s) | Invert (Start)<br>(ft) | Invert (Stop)<br>(ft) | Elevation<br>Ground (Start)<br>(ft) | Elevation<br>Ground (Stop)<br>(ft) | Hydraulic Grade<br>Line (In)<br>(ft) | Hydraulic Grade Line<br>(Out)<br>(ft) | Energy Grade Line (In)<br>(ft) | Energy Grade Line<br>(Out)<br>(ft) |
|---------|----------------|-----------|------------------|----------------|---------------|--------------------|------------------------|-----------------------|-------------------------------------|------------------------------------|--------------------------------------|---------------------------------------|--------------------------------|------------------------------------|
| CO-56   | INLET 7A RIGHT | MH 7A     | 24.0             | 25.6           | 0.6           | 3.50               | 5,289.20               | 5,289.00              | 5,296.70                            | 5,296.91                           | 5,289.48                             | 5,289.22                              | 5,289.57                       | 5,289.41                           |
| LINE 7E | INLET          | MH 7D     | 30.0             | 85.0           | 20.7          | 13.64              | 5,289.10               | 5,287.20              | 5,294.52                            | 5,294.87                           | 5,290.65                             | 5,289.47                              | 5,291.30                       | 5,289.75                           |
| LINE 7D | MH 7D          | MH 7C     | 30.0             | 28.2           | 20.7          | 14.17              | 5,287.20               | 5,286.50              | 5,294.87                            | 5,295.30                           | 5,288.75                             | 5,288.87                              | 5,289.40                       | 5,289.15                           |
| LINE 7C | MH 7C          | MH 7B     | 30.0             | 225.4          | 20.7          | 8.75               | 5,286.50               | 5,285.00              | 5,295.30                            | 5,297.26                           | 5,288.05                             | 5,287.24                              | 5,288.70                       | 5,287.53                           |
| LINE 7B | MH 7B          | MH 7A     | 30.0             | 213.5          | 20.7          | 8.93               | 5,285.00               | 5,283.50              | 5,297.26                            | 5,296.91                           | 5,286.55                             | 5,286.37                              | 5,287.20                       | 5,286.65                           |
| CO-55   | INLET 7A LEFT  | MH 7A     | 24.0             | 14.8           | 0.6           | 4.24               | 5,289.20               | 5,289.00              | 5,296.61                            | 5,296.91                           | 5,289.48                             | 5,289.20                              | 5,289.57                       | 5,289.45                           |
| LINE 7A | MH 7A          | EX MH 12  | 30.0             | 31.4           | 22.0          | 4.48               | 5,283.40               | 5,283.18              | 5,296.91                            | 5,296.69                           | 5,286.16                             | 5,286.11                              | 5,286.48                       | 5,286.42                           |
| LINE 11 | MH 11          | MH 6      | 24.0             | 425.2          | 14.0          | 9.38               | 5,296.92               | 5,292.50              | 5,303.80                            | 5,298.40                           | 5,298.27                             | 5,294.39                              | 5,298.87                       | 5,294.70                           |
| LINE 6  | MH 6           | MH 5      | 30.0             | 417.5          | 14.0          | 9.25               | 5,292.50               | 5,288.20              | 5,298.40                            | 5,298.00                           | 5,293.76                             | 5,292.15                              | 5,294.26                       | 5,292.28                           |
| LINE 9  | MH 9           | MH 5      | 24.0             | 361.4          | 14.0          | 11.02              | 5,294.00               | 5,288.20              | 5,303.00                            | 5,298.00                           | 5,295.35                             | 5,292.04                              | 5,295.95                       | 5,292.35                           |
| LINE 5  | MH 5           | MH 4      | 30.0             | 447.6          | 28.0          | 5.70               | 5,288.20               | 5,283.00              | 5,298.00                            | 5,294.74                           | 5,291.54                             | 5,290.31                              | 5,292.05                       | 5,290.82                           |
| LINE 10 | MH 10          | MH 8      | 24.0             | 121.8          | 18.0          | 5.73               | 5,287.82               | 5,286.00              | 5,297.00                            | 5,296.00                           | 5,292.89                             | 5,292.43                              | 5,293.40                       | 5,292.94                           |
| LINE 8  | MH 8           | MH 4      | 30.0             | 227.2          | 42.3          | 8.62               | 5,286.00               | 5,283.00              | 5,296.00                            | 5,294.74                           | 5,291.35                             | 5,289.92                              | 5,292.50                       | 5,291.07                           |
| LINE 4B | MH 4           | MH 4A     | 36.0             | 242.0          | 70.3          | 9.95               | 5,283.00               | 5,278.25              | 5,294.74                            | 5,296.06                           | 5,288.64                             | 5,287.05                              | 5,290.18                       | 5,288.59                           |
| LINE 4A | MH 4A          | EX MH 12  | 36.0             | 115.0          | 70.3          | 9.95               | 5,278.25               | 5,276.00              | 5,296.06                            | 5,296.69                           | 5,286.13                             | 5,285.37                              | 5,287.67                       | 5,286.91                           |
| LINE 3  | EX MH 12       | MH 2      | 42.0             | 228.2          | 92.3          | 9.59               | 5,276.00               | 5,274.00              | 5,296.69                            | 5,290.53                           | 5,284.17                             | 5,282.25                              | 5,285.60                       | 5,283.68                           |
| LINE 2B | MH 2           | MH 2A     | 42.0             | 204.4          | 111.9         | 11.63              | 5,274.00               | 5,272.30              | 5,290.53                            | 5,284.59                           | 5,280.59                             | 5,278.06                              | 5,282.69                       | 5,280.16                           |
| LINE 2A | MH 2A          | MH 1      | 42.0             | 55.4           | 111.9         | 11.63              | 5,272.30               | 5,271.10              | 5,284.59                            | 5,284.10                           | 5,276.80                             | 5,276.11                              | 5,278.90                       | 5,278.22                           |
| CO-52   | MH 18          | MH 1      | 24.0             | 153.0          | 6.7           | 2.13               | 5,272.70               | 5,271.10              | 5,284.15                            | 5,284.10                           | 5,277.41                             | 5,277.33                              | 5,277.48                       | 5,277.40                           |
| LINE 1  | MH 1           | AP-D      | 42.0             | 43.0           | 118.6         | 25.79              | 5,271.10               | 5,268.40              | 5,284.10                            | 5,282.94                           | 5,274.34                             | 5,270.60                              | 5,276.87                       | 5,276.00                           |



## Office Locations

Albuquerque, New Mexico (505) 883-8114  
Austin, Texas (512) 237-1129  
Dallas, Texas (214) 871-3311  
Denver, Colorado (303) 740-7325  
El Paso, Texas (915) 587-4339  
Fort Worth, Texas (817) 335-3000  
Glendale, California (818-456-1833  
Houston (Downtown), Texas (713) 622-1180  
Houston (West), Texas (281) 496-0066  
Irvine, California (949) 988-5815  
Los Angeles, California (310) 820-4600  
Oklahoma City, Oklahoma (405) 842-0363  
Ontario, California (909) 941-7799  
Orlando , Florida (407) 839-0414  
Phoenix, Arizona (602) 952-9123  
Rio Rancho, New Mexico (505) 892-5141  
Seattle, Washington (206) 324-5500  
Tacoma, Washington (253) 627-9131  
Thousand Oaks, California (805) 418-1802



# HUITT-ZOLIARS

T.I.D.D. INFRASTRUCTURE LIST - PHASE B

EXHIBIT "B"

Date Submitted: 7/10/2019  
Date Site Plan Approved: \_\_\_\_\_  
Date Preliminary Plat Approved: NA  
Date Preliminary Plat Expires: NA  
DRB Project No.: 1002202  
DRB Application No.: 2018-001579

Parcel A-1-A-1-A-1-A-1-A  
PROPOSED NAME OF SITE DEVELOPMENT PLAN  
Phase A Winrock Town Center, 2100 Louisiana Blvd NE

EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION

| EXISTING LEGAL DESCRIPTION PRIOR TO PLATTING ACTION |                      |         |                                                                                                                                                                                                                                                       | Private City City Cnst<br>Inspector Inspector Engineer |                                                                |                                                          |
|-----------------------------------------------------|----------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------|
| SIA<br>Sequence #                                   | COA BLDG<br>PERMIT # | Size    | Type of Improvement                                                                                                                                                                                                                                   | Location                                               | From                                                           | To                                                       |
|                                                     |                      | Varies  | *****TRANSPORTATION*****<br>DEMOLITION OF EXISTING CONCRETE,<br>ASPHALT, UTILITIES FOR NEW<br>CONSTRUCTION                                                                                                                                            | ROAD 'B'                                               | ROAD 'D'                                                       | REGAL CINEMA                                             |
|                                                     |                      | 34' F-F | DRIVE AND AUXILIARY LANES, CURB AND<br>GUTTER, ARCHITECTURAL DETAILED<br>COLORED SIDEWALK, ARCHITECTURAL<br>DETAILED COLORED CONCRETE<br>CROSSWALKS, VALLEY GUTTERS,<br>PERMANENT SIGNAGE AND STRIPING, AND<br>INTERSECTION IMPROVEMENTS              | ROAD 'B'                                               | ROAD 'D'                                                       | APPROX 215' EAST OF ROAD 'D'<br>INTERSECTION             |
|                                                     |                      | 46' F-F | DRIVE, AUXILIARY LANES ON-ROAD PARKING,<br>CURB AND GUTTER, ARCHITECTURAL<br>DETAILED COLORED SIDEWALK,<br>ARCHITECTURAL DETAILED COLORED<br>CONCRETE CROSSWALKS, VALLEY GUTTERS,<br>PERMANENT SIGNAGE AND STRIPING, AND<br>INTERSECTION IMPROVEMENTS | ROAD 'B'                                               | APPROX 215' EAST OF PUBLIC GARAGE ACCESS ROAD<br>ROAD 'D'      | INTERSECTION (APPROX. 250' EAST<br>OF 34' F-F SECTION)   |
|                                                     |                      | 82' F-F | DRIVE, AUXILIARY LANES ON-ROAD PARKING,<br>CURB AND GUTTER, ARCHITECTURAL<br>DETAILED COLORED SIDEWALK,<br>ARCHITECTURAL DETAILED COLORED<br>CONCRETE CROSSWALKS, VALLEY GUTTERS,<br>PERMANENT SIGNAGE AND STRIPING, AND<br>INTERSECTION IMPROVEMENTS | ROAD 'B'                                               | PUBLIC GARAGE<br>ACCESS ROAD<br>INTERSECTION<br>(APPROX. 250') | PHASE BOUNDARY (APPROX. 385'<br>EAST OF 46' F-F SECTION) |

| S/A<br>Sequence # | COA BLDG<br>PERMIT # | Size    | Type of Improvement                                                                                                  | Location                      | From                                                        | To                                   | Private<br>Inspector | City<br>Inspector | City Const<br>Engineer |
|-------------------|----------------------|---------|----------------------------------------------------------------------------------------------------------------------|-------------------------------|-------------------------------------------------------------|--------------------------------------|----------------------|-------------------|------------------------|
|                   |                      | 24'-F-F | DRIVE LANES, CURB AND GUTTER,<br>RETAINING WALL, PERMANENT SIGNAGE AND<br>STRIPING, AND INTERSECTION<br>IMPROVEMENTS | PUBLIC GARAGE ACCESS ROAD     | ROAD 'B'                                                    | PUBLIC PARKING GARAGE<br>ACCESS RAMP | /                    | /                 | /                      |
|                   |                      |         | ROADWAY LIGHTING, CIP                                                                                                | ROAD 'B'                      | ROAD 'D'                                                    | PHASE BOUNDARY - APPROX 850'<br>EAST | /                    | /                 | /                      |
|                   |                      | Varies  | TRANSITION TO EXISTING                                                                                               | ROAD 'B'                      | PHASE BOUNDARY                                              | REGAL CINEMA                         | /                    | /                 | /                      |
|                   |                      |         | EXISTING CANOPY RENOVATIONS                                                                                          | ROAD 'B'                      | APPROX. 100' EAST<br>OF ROAD 'D'<br>INTERSECTION            |                                      | /                    | /                 | /                      |
|                   |                      |         | COVERED PEDESTRIAN WALKWAY                                                                                           | ROAD 'B' (130' RIGHT)         | PUBLIC PARKING<br>GARAGE ACCESS<br>RAMP CROSSING<br>(ABOVE) | EXTEND APPROX. 150'                  | /                    | /                 | /                      |
|                   |                      |         | *****LANDSCAPE*****                                                                                                  |                               |                                                             |                                      |                      |                   |                        |
|                   |                      |         | STREETSCAPE, LANDSCAPE AND IRRIGATION                                                                                | ROAD 'B'                      | ROAD 'D'                                                    | PHASE BOUNDARY - APPROX 850'<br>EAST | /                    | /                 | /                      |
|                   |                      | 30"     | *****STORM DRAIN*****<br>STORM DRAIN, INLETS, AND MANHOLES -<br>(7a thru 7e)                                         | ROAD 'B'                      | ROAD 'D'                                                    | STORM WATER QUALITY POND             | /                    | /                 | /                      |
|                   |                      | 36"     | STORM DRAIN, INLETS, AND MANHOLES - (8a)                                                                             | West of Regal Cinema          | SD MH 4                                                     | SD MH 8A                             | /                    | /                 | /                      |
|                   |                      | 30"     | STORM DRAIN, INLETS, AND MANHOLES -<br>(8b)                                                                          | West of Regal Cinema          | SD MH 8A                                                    | SD MH 8B                             | /                    | /                 | /                      |
|                   |                      | 24"     | STORM DRAIN, INLETS, AND MANHOLES -<br>(9a thru 9b)                                                                  | West of Regal Cinema          | SD MH 8B                                                    | SD MH 9A1                            | /                    | /                 | /                      |
|                   |                      | 30"     | STORM DRAIN, INLETS, AND MANHOLES -<br>(18b)                                                                         | West of Regal Cinema          | SD MH 3A                                                    | EX MH 14a                            | /                    | /                 | /                      |
|                   |                      | 48"     | STORM DRAIN, INLETS, AND MANHOLES - (7)                                                                              | West of Regal Cinema          | SD MH 5                                                     | SD MH 7                              | /                    | /                 | /                      |
|                   |                      | 60"     | STORM DRAIN, INLETS, AND MANHOLES - (4a,<br>4b, 5 & 6)                                                               | West of Regal Cinema          | POND OUTFALL                                                | SD MH 3A                             | /                    | /                 | /                      |
|                   |                      |         | PUBLIC RAMP INLET/PUMP/FORCE MAIN                                                                                    | Public Ramp                   | GARAGE ENTRANCE                                             | SD MH 7C                             | /                    | /                 | /                      |
|                   |                      |         | STORM WATER QUALITY POND w/ DRAINAGE<br>COVENANT                                                                     | North of Road B - FUTURE PARK | FUTURE PARK                                                 | FUTURE PARK                          | /                    | /                 | /                      |
|                   |                      |         | ENGINEERS CERTIFICATION OF GRADING AND<br>DRAINAGE                                                                   | ROAD 'B' EXTENSION WORK ORDER | PHASE B                                                     | PHASE B                              | /                    | /                 | /                      |

One: 24"-36"  
corb. into  
this? eliminate?

One: 8a-9b/a  
corb. into

not sure where this is

| SIA<br>Sequence # | COA BLDG<br>PERMIT # | Size | Type of Improvement                                                    | Location  | From     | To           | Private<br>Inspector | City<br>Inspector | City Onst<br>Engineer |
|-------------------|----------------------|------|------------------------------------------------------------------------|-----------|----------|--------------|----------------------|-------------------|-----------------------|
|                   |                      | 8"   | *****PRIVATE SAS DEMOLITION*****<br>PRIVATE SAS DEMOLITION AND REMOVAL | ROAD ' B' | ROAD 'D' | REGAL CINEMA | /                    | /                 | /                     |
|                   |                      | 8"   | *****WATER*****<br>WATERLINE W/ APPERTUNANCES                          | ROAD ' B' | ROAD 'D' | REGAL CINEMA | /                    | /                 | /                     |
|                   |                      | TBD  | *****REUSE WATER*****<br>REUSE WATERLINE W/ APPERTUNANCES              | ROAD ' B' | ROAD 'D' | REGAL CINEMA | /                    | /                 | /                     |
|                   |                      | 8"   | *****SANITARY SEWER*****<br>8" SANITARY SEWERLINE W/<br>APPERTUNANCES  | ROAD ' B' | ROAD 'D' | REGAL CINEMA | /                    | /                 | /                     |
|                   |                      |      |                                                                        |           |          |              | /                    | /                 | /                     |

NOTES

1 \_\_\_\_\_

2 \_\_\_\_\_

3 \_\_\_\_\_

|               |                                           |
|---------------|-------------------------------------------|
| AGENT / OWNER | DEVELOPMENT REVIEW BOARD MEMBER APPROVALS |
|---------------|-------------------------------------------|

Scott Eddings

Huitt-Zollars, Inc.

NAME (print) \_\_\_\_\_

DRB CHAIR - date \_\_\_\_\_

PARKS & GENERAL RECREATION - date \_\_\_\_\_

TRANSPORTATION DEVELOPMENT - date \_\_\_\_\_

AMAFCA - date \_\_\_\_\_

UTILITY DEVELOPMENT - date \_\_\_\_\_

CITY ENGINEER - date \_\_\_\_\_

SIGNATURE - date *7/10/19*

MAXIMUM TIME ALLOWED TO CONSTRUCT  
THE IMPROVEMENTS WITHOUT A DRB  
EXTENSION: 1-YEAR

| DESIGN REVIEW COMMITTEE REVISIONS |      |           |                 |               |
|-----------------------------------|------|-----------|-----------------|---------------|
| REVISION                          | DATE | DRG CHAIR | USER DEPARTMENT | AGENT / OWNER |
|                                   |      |           |                 |               |
|                                   |      |           |                 |               |
|                                   |      |           |                 |               |