

CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director



Mayor Timothy M. Keller

September 24, 2019

Åsa Nilsson-Weber, P.E.
Isaacson & Arfman, P.A.
128 Monroe St. N.E
Albuquerque, NM 87108

RE: **Mercado el Milagro**
10000 Central SW
Conceptual Grading Plan Stamp Date: 9/6/19
Drainage Report Stamp Date: 9/6/19
Hydrology File: L09D042

Dear Ms. Nilsson-Weber:

PO Box 1293
Albuquerque
NM 87103
www.cabq.gov

Based on the submittal received on 9/9/19 the above-referenced submittal is approved for Site Plan for Building Permit.

Prior to Building Permit (For Information):

1. Additional detail is required on the retaining wall:
 - a. A structural design for wall with showing how a reversed footer will be built on the property line.
 - b. Grades in the adjacent lot, top of wall, and bottom of wall elevations, showing tie-in at property line along the length of the wall.
 - c. A detail of the spillover structure showing how flows will be accepted into this site.
 - d. A cross-lot drainage easement is needed for undeveloped flows along the interim condition flow path.
2. Remove all "Conceptual" markings.
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 (Doug Hughes, PE, jhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.
4. For trash enclosures serving food service developments, demonstrate *control of liquids from dumpster areas* per DPM Chapter 22.9.E, Table 1 by containing runoff from the dumpster area and discharging to the sanitary sewer. If this information is on the utility plan please provide it, or show on the grading plan.

CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Director



Mayor Timothy M. Keller

5. Stormwater quality ponding or payment in lieu requirements must be met for each phase.
6. Additional comments may be provided at Building Permit, based on the outcome of the above remarks and level of detail shown on plans.

Prior to Certificate of Occupancy (For Information):

7. Engineer's Certification, per the DPM Chapter 22.7: *Engineer's Certification Checklist For Non-Subdivision* is required.
8. City acceptance and close-out of the public Work Order will be required, unless a financial guarantee has been posted.
9. A Bernalillo County Recorded [Drainage Covenant \(No Public Easement\)](#) is required for the storm water ponds. The original notarized form, exhibit A (legible on 8.5x11 paper), and recording fee (\$25, payable to Bernalillo County) must be turned into DRC (4th, Plaza del Sol) for routing. Please contact Charlotte LaBadie (clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants. The routing and recording process for covenants can take a month or longer; Hydrology recommends beginning this process as soon as possible as to not delay approval for certificate of occupancy.

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

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

PO Box 1293

Albuquerque

NM 87103

www.cabq.gov



City of Albuquerque

Planning Department

Development & Building Services Division

DRAINAGE AND TRANSPORTATION INFORMATION SHEET (REV 11/2018)

Mercado El Milagro

Project Title: New Site Plan **Building Permit #:** _____ **Hydrology File #:** L09D042
DRB#: _____ **EPC#:** _____ **Work Order#:** _____
Legal Description: Lot 1-A, Block 1 Excluding the 'Ely Por' of Lots 1-A & 1-B, Lands of the Atrisco Grant and Lot 2, Block 1, Plat of Lands of the Atrisco Grant
City Address: 10000 Central Ave. SW - Albuquerque, NM 87121

Applicant: Isaacson & Arfman, PA **Contact:** Åsa Nilsson-Weber
Address: 128 Monroe Street NE - Albuquerque, NM 87108
Phone#: (505) 268-8828 **Fax#:** _____ **E-mail:** asaw@iacivil.com

Owner: Peterson Properties **Contact:** _____
Address: 2325 San Pedro Drive NE - Albuquerque, NM 87110
Phone#: (505) 884-3578 **Fax#:** _____ **E-mail:** _____

TYPE OF SUBMITTAL: _____ PLAT (____# OF LOTS) _____ RESIDENCE ☒ DRB SITE _____ ADMIN SITE

IS THIS A RESUBMITTAL?: ☒ Yes _____ No

DEPARTMENT: _____ TRAFFIC/ TRANSPORTATION ☒ HYDROLOGY/ DRAINAGE

Check all that Apply:

TYPE OF SUBMITTAL:

☒ ENGINEER/ARCHITECT CERTIFICATION
____ PAD CERTIFICATION
☒ CONCEPTUAL G & D PLAN
____ GRADING PLAN
____ DRAINAGE MASTER PLAN
____ DRAINAGE REPORT
____ FLOODPLAIN DEVELOPMENT PERMIT APPLIC
____ ELEVATION CERTIFICATE
____ CLOMR/LOMR
____ TRAFFIC CIRCULATION LAYOUT (TCL)
____ TRAFFIC IMPACT STUDY (TIS)
____ OTHER (SPECIFY) _____
____ PRE-DESIGN MEETING?

TYPE OF APPROVAL/ACCEPTANCE SOUGHT:

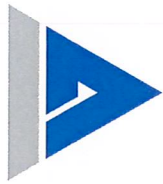
____ BUILDING PERMIT APPROVAL
____ CERTIFICATE OF OCCUPANCY
____ PRELIMINARY PLAT APPROVAL
____ SITE PLAN FOR SUB'D APPROVAL
☒ SITE PLAN FOR BLDG. PERMIT APPROVAL
____ FINAL PLAT APPROVAL
____ SIA/ RELEASE OF FINANCIAL GUARANTEE
____ FOUNDATION PERMIT APPROVAL
____ GRADING PERMIT APPROVAL
____ SO-19 APPROVAL
____ PAVING PERMIT APPROVAL
____ GRADING/ PAD CERTIFICATION
____ WORK ORDER APPROVAL
____ CLOMR/LOMR
____ FLOODPLAIN DEVELOPMENT PERMIT
____ OTHER (SPECIFY) _____

DATE SUBMITTED: September 6, 2019 **By:** Åsa Nilsson-Weber

COA STAFF:

ELECTRONIC SUBMITTAL RECEIVED: _____

FEE PAID: _____



September 6, 2019

Mr. Dana Peterson, PE
Senior Engineer, Planning Dept.
City of Albuquerque
600 2nd Street NW
Albuquerque, NM 87103

RE: L09D042–Mercado el Milagro

Dear Mr. Peterson:

Please see attached for a revised grading & drainage plan. Your comments for Site Plan for Building Permit from August 7, 2020 (attached) are addressed below.

1. Per the meeting on August 20, 2019 with you, Shahab Biazar and Jeanne Wolfenbarger, the street section will be revised to provide a steeper slope (8%) at the landscape buffer area to contain the EGL within the right-of-way. The water would back up approximately 8 feet into the entrance at the fully developed conditions during the peak No structures would be flooded since the site slopes toward Sunset Gardens Rd., Per Shahab, no drainage easement will be required in this area.
2. The wall design will be addressed with the detailed building permit sets for each phase.
 - a. Structural wall design will be provided with the building permit plans for each phase. A typical perimeter wall section is shown on the conceptual grading plan stating that the wall or footing cannot extend onto adjacent properties without permission.
 - b. Top/bottom of wall elevations shall be provided with building permit plans.
 - c. Blocking offsite flows to pond and overflow to Sunset Gardens Rd. was not approved—offsite flows have to be accepted. The conceptual grading plan showing the ultimate buildout has been revised to include a pond to accept the offsite flows from the west and a weir overflow structure by the south entrance to direct the flows to Sunset Gardens Rd. As each phase develops, the offsite flow shall be addressed.
 - d. A cross-lot drainage easement over this property shall be provided by document.

If you have questions regarding this submittal, please call me at 268-8828 or email me at asaw@iacivil.com.

Thank you.

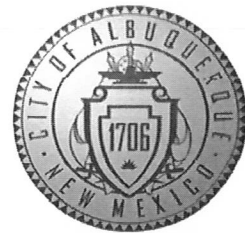
Sincerely,
ISAACSON & ARFMAN

Åsa Nilsson-Weber

Attachments

CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Interim Director



Mayor Timothy M. Keller

August 7, 2019

Åsa Nilsson-Weber, P.E.
Isaacson & Arfman, P.A.
128 Monroe St. N.E
Albuquerque, NM 87108

RE: **Mercado el Milagro**
10000 Central SW
Conceptual Grading Plan Stamp Date: 7/30/19
Drainage Report Stamp Date: 7/30/19
Hydrology File: L09D042

Dear Ms. Nilsson-Weber:

PO Box 1293

Based on the submittal received on 7/31/19 the above-referenced submittal cannot be approved for Site Plan for Building Permit until the following are corrected:

Albuquerque

Prior to Site Plan for Building Permit:

NM 87103

1. The 100-yr EGL needs to remain in the ROW; especially across the drive entrance. So inlets will likely need to be moved to the upstream side of the entrance.
2. Additional detail is required on the retaining wall:
 - a. A structural design for wall with showing how a reversed footer will be built on the property line.
 - b. Grades in the adjacent lot, top of wall, and bottom of wall elevations, showing tie-in at property line along the length of the wall.
 - c. A detail of the spillover structure showing how flows will be accepted into this site.
 - d. A cross-lot drainage easement is needed for undeveloped flows along the interim condition flow path.

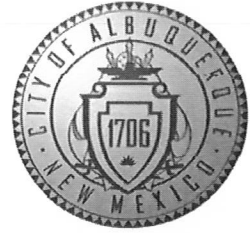
www.cabq.gov

Prior to Building Permit (For Information):

3. Remove all "Conceptual" markings.
4. 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 (Doug Hughes, PE, dhughes@cabq.gov, 924-3420) 14 days prior to any earth disturbance.

CITY OF ALBUQUERQUE

Planning Department
Brennon Williams, Interim Director



Mayor Timothy M. Keller

5. For trash enclosures serving food service developments, demonstrate *control of liquids from dumpster areas* per DPM Chapter 22.9.E, Table 1 by containing runoff from the dumpster area and discharging to the sanitary sewer. If this information is on the utility plan please provide it, or show on the grading plan.
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7. Additional comments may be provided at Building Permit, based on the outcome of the above remarks and level of detail shown on plans.

Prior to Certificate of Occupancy (For Information):

8. Engineer's Certification, per the DPM Chapter 22.7: *Engineer's Certification Checklist For Non-Subdivision* is required.
9. City acceptance and close-out of the public Work Order will be required, unless a financial guarantee has been posted.
10. A Bernalillo County Recorded Drainage Covenant (No Public Easement) is required for the storm water ponds. The original notarized form, exhibit A (legible on 8.5x11 paper), and recording fee (\$25, payable to Bernalillo County) must be turned into DRC (4th, Plaza del Sol) for routing. Please contact Charlotte LaBadie (clabadie@cabq.gov, 924-3996) or Madeline Carruthers (mtafoya@cabq.gov, 924-3997) regarding the routing and recording process for covenants. The routing and recording process for covenants can take a month or longer; Hydrology recommends beginning this process as soon as possible as to not delay approval for certificate of occupancy.

PO Box 1293

Albuquerque

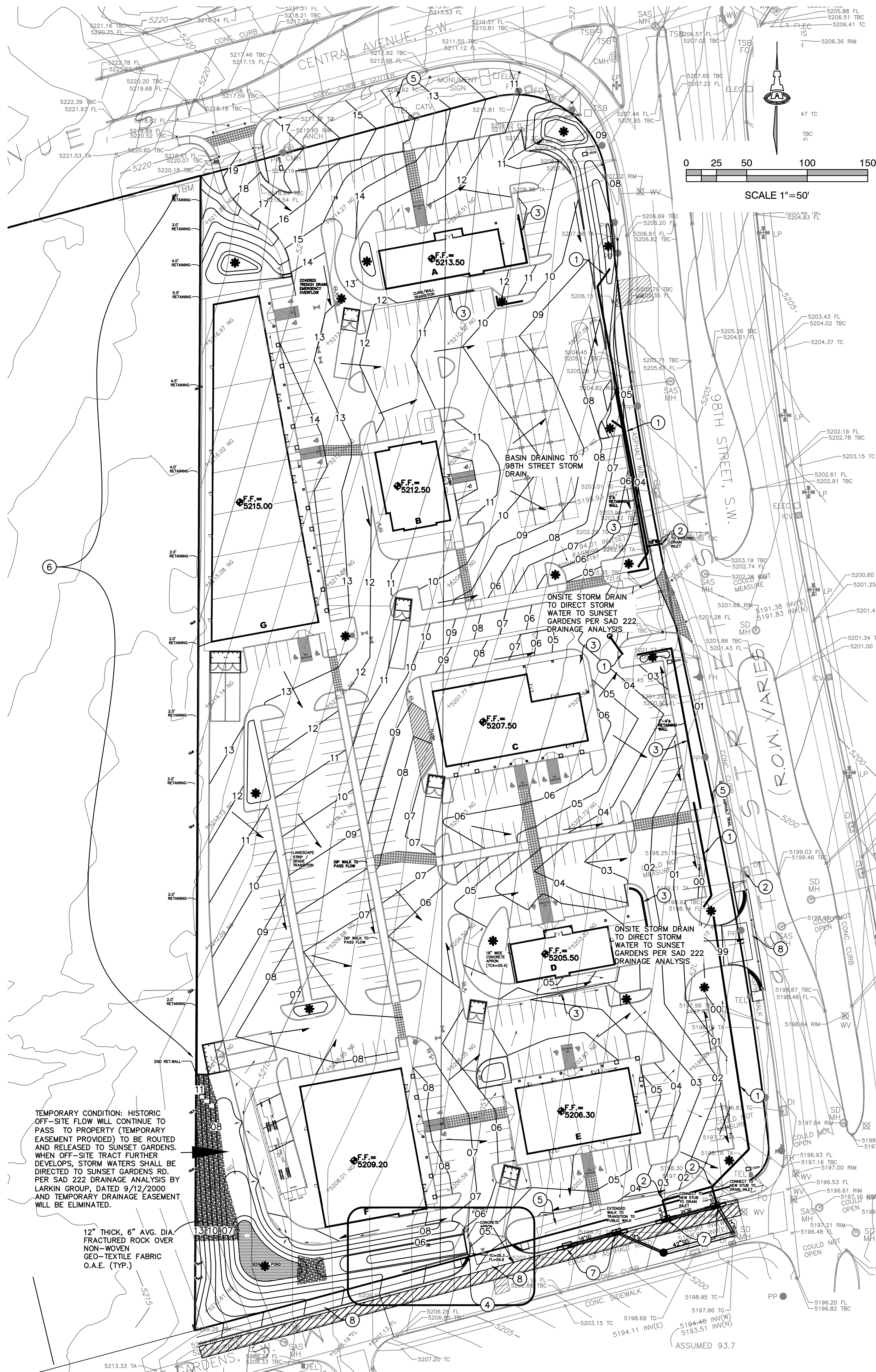
NM 87103

www.cabq.gov

If you have any questions, please contact me at 924-3695 or dpeterson@cabq.gov.

Sincerely,

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



STORMWATER QUALITY

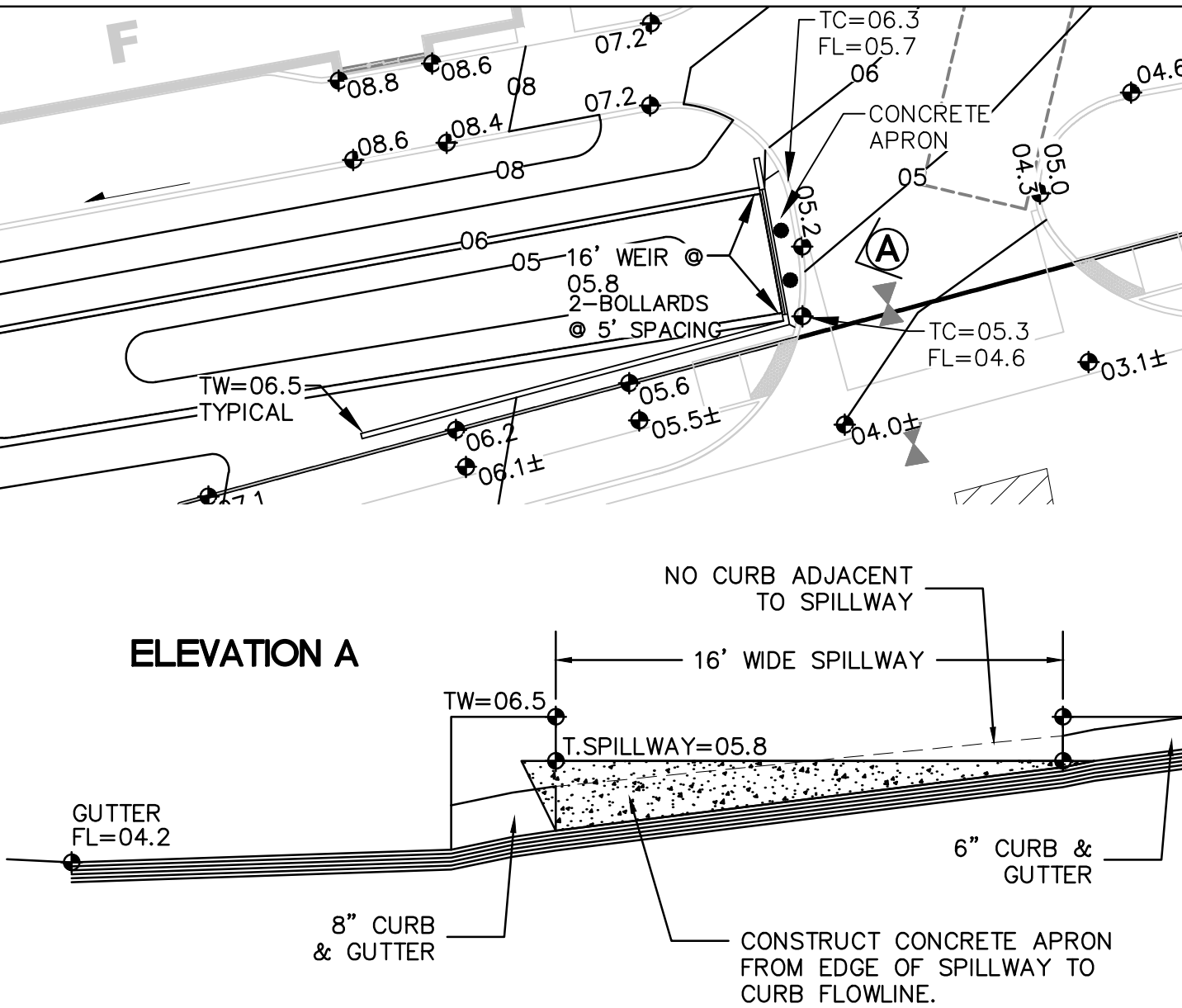
FOR NEW CONSTRUCTION, THE CABQ STORMWATER QUALITY (S.Q.) VOLUME IS BASED ON THE 90TH PERCENTILE STORM EVENT OR 0.34" [0.44" LESS 0.1" FOR INITIAL ABSTRACTION] OF STORMWATER WHICH DISCHARGES DIRECTLY TO A PUBLIC STORM DRAINAGE SYSTEM).

THE ESTIMATED IMPERVIOUS AREA FOR THIS PROPERTY IS CALCULATED AS 82% OF TOTAL AREA: (0.82 * 8.67 AC) = 309,576 SF. THE TOTAL REQUIRED S.Q. RETENTION VOLUME = 0.34" * TYPE "D" AREA: 0.34/12 * (309,576 SF) = 8,772 CF. THIS MAY VARY DEPENDING ON THE FINAL IMPERVIOUS AREA TO BE CONSTRUCTED WITH EACH PHASE.

S.Q. RETENTION PONDS WILL BE CONSTRUCTED THROUGHOUT THE PROPERTY AS THE SITE DEVELOPS. FINAL LOCATIONS AND DESIGN WILL BE PROVIDED AS PART OF THE INDIVIDUAL BUILDING PERMIT CONSTRUCTION DOCUMENTS. AREAS ARE SHOWN (LABELED WITH *) TO INDICATE POTENTIAL S.Q. POND LOCATIONS. PRIVATE FACILITY DRAINAGE COVENANT(S) WILL BE PROVIDED FOR THE S.Q. PONDS IF REQUIRED.

PRIOR TO EACH BUILDING PERMIT APPROVAL, A "PAYMENT IN-LIEU FOR S.Q. VOLUME REQUIREMENT" TREASURY DEPOSIT SLIP WILL BE PROVIDED BY C.O.A. HYDROLOGY BASED ON THE PORTION OF S.Q. VOLUME (@ \$8.00 PER CF) THAT IS NOT RETAINED ON-SITE. A COPY OF THE PAID RECEIPT WILL BE REQUIRED PRIOR TO RECEIVING HYDROLOGY APPROVAL FOR BUILDING PERMIT.

OUTFLOW STRUCTURE DETAIL



PERIMETER WALLS

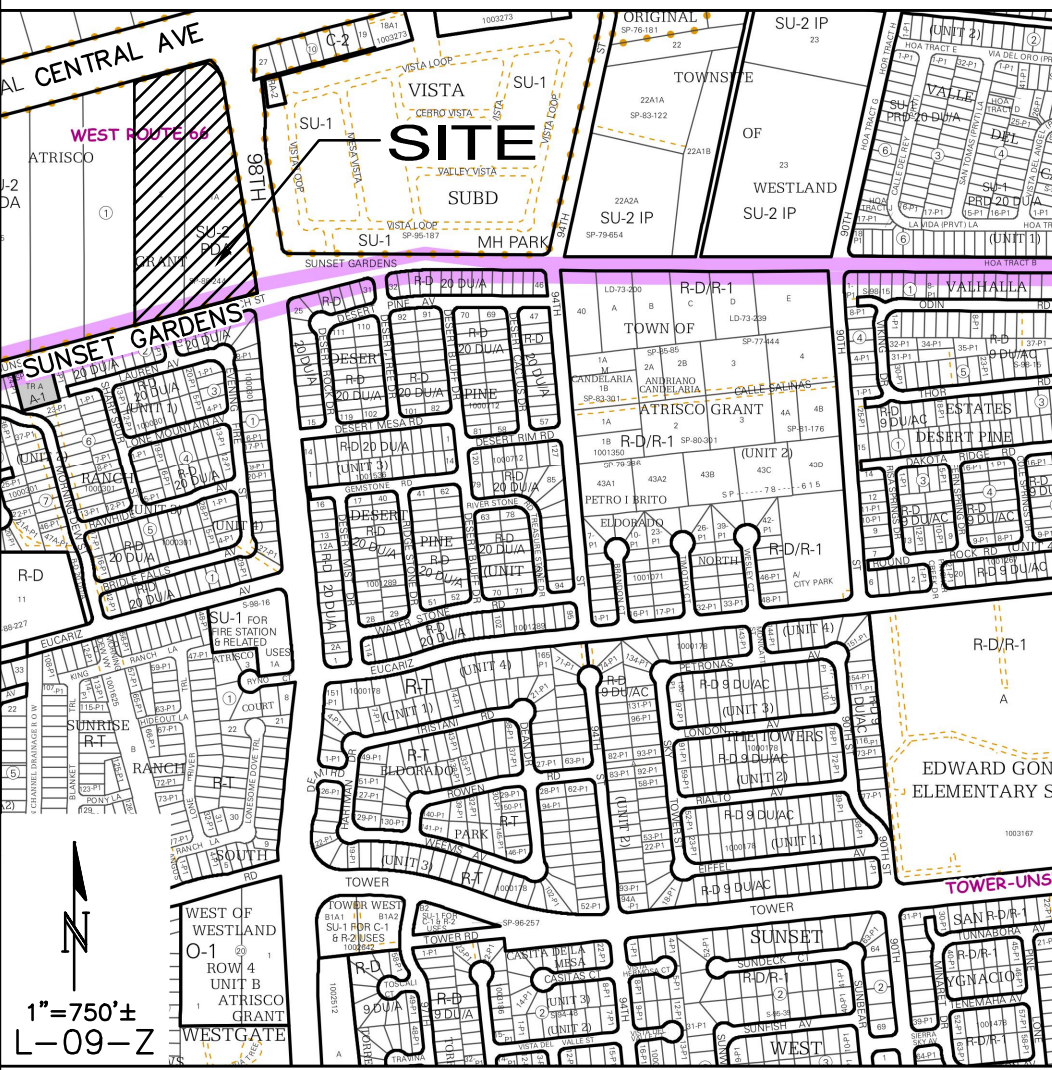
IN ACCORDANCE WITH CABQ DPM CH. 22, SECTION 5, PART B, GRADING AND WALL CONSTRUCTION NEAR THE PROPERTY LINE MAY NOT ENDANGER ADJACENT PROPERTY OR CONSTRAIN ITS USE.

NO PERIMETER WALLS (RETAINING AND/OR PRIVACY) MAY BE CONSTRUCTED ON ADJACENT PROPERTY (INCLUDING WALL FOOTING) WITHOUT ADJACENT PROPERTY OWNER'S PERMISSION. STRUCTURAL DETAILS, INCLUDING FOOTINGS, GUARDRAILS, WATERPROOFING, REINFORCING, ETC. WILL BE DESIGNED AS PART OF BUILDING PERMIT PLANS.

GENERAL NOTES

- GRADES SHOWN ON THE CONCEPTUAL GRADING AND DRAINAGE PLAN REFLECT THE OVERALL GRADING SCHEME. ADA COMPLIANT PARKING WILL BE COORDINATED WITH ARCHITECT TO ENSURE MAX. 2% SLOPE IN ANY DIRECTION.
- LANDSCAPING WILL BE DEPRESSED TO HARVEST STORMWATER EXCEPT WITHIN 10' OF A BUILDING OR STRUCTURE.
- ROCK EROSION PROTECTION WILL BE REQUIRED AT CURB OPENINGS, ON SLOPES > 4:1 AND WITHIN SWALES CARRYING CONCENTRATED FLOW.
- STEPS, RAMPS, AND TRANSITION GARDEN RETAINING WALLS AS REQUIRED TO ACHIEVE GRADE TRANSITIONS WILL BE DETERMINED AS EACH PROPERTY DEVELOPS.
- PERIMETER RETAINING WALLS: PER THE DPM, CHAPTER 22.5 B, CARE SHOULD BE TAKEN TO ENSURE THAT THE ADJACENT PROPERTY IS NOT DAMAGED OR ITS USE CONSTRAINED DUE TO GRADING AT OR NEAR THE PROPERTY LINE. ENCROACHING INTO THE ADJACENT PROPERTY WITH GRADING AND/OR WALL FOOTING WILL REQUIRE WRITTEN PERMISSION FROM THE AFFECTED PROPERTY OWNERS. LETTERS ARE TO BE PROVIDED TO COA HYDROLOGY FOR THEIR FILES PRIOR TO HYDROLOGY APPROVAL FOR BUILDING PERMIT.
- STORMWATER QUALITY RETENTION PONDS WILL BE LOCATED AND CONSTRUCTED AS EACH PROPERTY DEVELOPS. PRIOR TO BUILDING PERMIT APPROVAL, A "PAYMENT IN-LIEU FOR S.Q. VOLUME REQUIREMENT" TREASURY DEPOSIT SLIP WILL BE PROVIDED BY C.O.A. HYDROLOGY BASED ON THE PORTION OF S.Q. VOLUME (@ \$8.00 PER CF) THAT IS NOT RETAINED ON-SITE. A COPY OF THE PAID RECEIPT WILL BE REQUIRED PRIOR TO RECEIVING HYDROLOGY APPROVAL FOR BUILDING PERMIT.

VICINITY MAP L-09



PROJECT INFORMATION

PROPERTY: THE SITE IS AN UNDEVELOPED PROPERTY LOCATED WITHIN C.O.A. VICINITY MAP L-09. THE SITE IS BOUND TO THE EAST BY 98TH ST. SW. TO THE WEST BY PARTIALLY DEVELOPED COMMERCIAL PROPERTY, TO THE NORTH BY CENTRAL AVE. SW AND TO THE SOUTH BY SUNSET GARDENS RD SW.

PROPOSED IMPROVEMENTS: THE PROPOSED IMPROVEMENTS INCLUDE A MULTI-BUILDING COMMERCIAL CENTER WITH ASSOCIATED ASPHALT PAVED ACCESS, PARKING, AND LANDSCAPING.

LEGAL: LOT 1-A, BLK 1 EXCLUDING THE 'ELY POR' OF LOTS 1-A & 1-B, LANDS OF ATRISCO LAND GRANT (4.25 ACRE) AND LOT 2 BLK 1, PLAT OF LANDS OF THE ATRISCO GRANT (4.61 ACRE)

BENCHMARK: ACS MONUMENT 14-K9: A 3-1/4" ALUMINUM DISK SET IN CONCRETE AT THE NW CORNER OF THE INTERSECTION OF BRIDGE BLVD SW AND 86TH ST. SW. ELEVATION (NAVD 1988): 5117.017

TEMPORARY BENCHMARKS: A 1/2" REBAR W/PLASTIC CAP "PS 14269" SET AT THE NW CORNER OF LOT 2 OF THIS SURVEY. ELEVATION (NAVD 1988): 5218.38

FLOOD HAZARD: THIS PROPERTY LIES WITHIN FEMA FLOODZONE "X" (NO FLOOD HAZARD) AND IS NOT SUBJECT TO 100-YEAR FLOOD HAZARDS. REFERENCE: FLOOD INSURANCE RATE MAP, ALBUQUERQUE, BERNALILLO COUNTY, NEW MEXICO PANEL 350002 0328 H; EFFECTIVE DATE: AUGUST 16, 2012.

OFFSITE FLOWS

OFFSITE TRACTS WEST OF THE PROPERTY HISTORICALLY DRAIN 26.9 CFS OF STORMWATER ACROSS THIS PROPERTY TOWARD 98TH STREET.

AS EACH PHASE OF THIS PROPERTY IS DEVELOPED, THE OFFSITE DRAINAGE IMPACTING THE SPECIFIC PHASE SHALL BE ASSESSED AND ADDRESSED AS PART OF THE HYDROLOGY SUBMITTAL FOR BUILDING PERMIT. THIS GRADING PLAN SHOWS HOW THE FULLY DEVELOPED TRACT WILL ROUTE THE OFFSITE FLOWS THROUGH THE SITE.

KEYED NOTES

- PRIVATE ON-SITE STORM DRAIN SYSTEM AS NEEDED.
- CONNECTION TO PUBLIC STORM DRAIN INLET.
- RETAINING / GARDEN WALLS (WHERE NEEDED) TO ACHIEVE GRADE TRANSITIONS.
- SEE OUTFLOW STRUCTURE DETAIL THIS SHEET.
- ADA COMPLIANT CONNECTION TO PUBLIC SIDEWALK.
- PERIMETER WALL WITH RETAINING AS NEEDED TO ACHIEVE GRADE TRANSITION.
- NEW PUBLIC STORM DRAIN INLETS TO BE CONSTRUCTED AS PART OF PUBLIC WORK ORDER (PWO).
- NEW PAVING, CURB AND GUTTER, SIDEWALK, SITE ENTRANCE TO BE CONSTRUCTED AS PART OF PWO.

LEGEND

- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED SPOT ELEVATION
- FLOW ARROW
- FINISH FLOOR ELEVATION
- STORMWATER QUALITY LOCATION

CONCEPTUAL GRADING + DRAINAGE PLAN

ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates
128 Monroe Street N.E.
Albuquerque, New Mexico 87108
Ph. 505-268-8828 www.isaacson.com
2306 CG-101 CONCEPTUAL.dwg Sep 24, 2019

MARTIN FM GRUMMER
ARCHITECT
331 WELLESLEY PLACE NE
ALBUQUERQUE, NEW MEXICO 87106
(505) 265-2507

PETERSON
PROPERTIES

ISAACSON & ARFMAN, P.A.
NEW MEXICO
17631
NOT FOR CONSTRUCTION
SEPTEMBER 08, 2019

MERCADO EL MILAGRO
NEW SITE PLAN
10000 CENTRAL AVENUE SW
ALBUQUERQUE, NEW MEXICO 87121

DATE:
DRAWN BY:
CHECKED BY:
VERIFIED BY:

REVISIONS

SHEET NO:
CG-101

SEPTEMBER 5, 2019

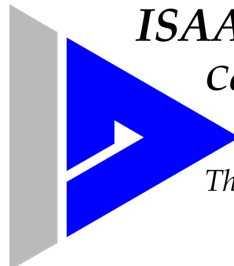
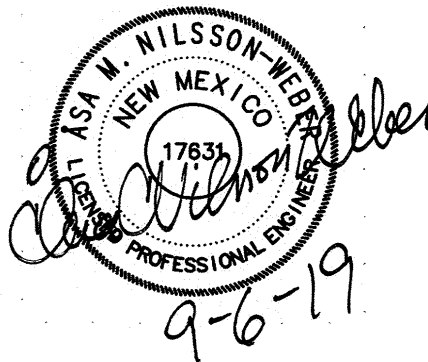
DRAINAGE REPORT

for

MERCADO EL MILAGRO
Lots 1A & 2, Block 1, Lands of Atrisco Grant
98TH ST & CENTRAL AVE SW

ALBUQUERQUE, NM

BY



ISAACSON & ARFMAN, P.A.
Consulting Engineering Associates

Thomas O. Isaacson, PE(RET.) & LS(RET.)
Fred C. Arfman, PE
Åsa Nilsson-Weber, PE

I&A Project No. 2306

TABLE OF CONTENT

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BASIN EXHIBIT

AHYMO DRAINAGE CALCULATIONS

APPENDIX B

STREET CAPACITY CALCULATIONS

INLET CAPACITY CALCULATIONS

STORM DRAIN CALCULATIONS

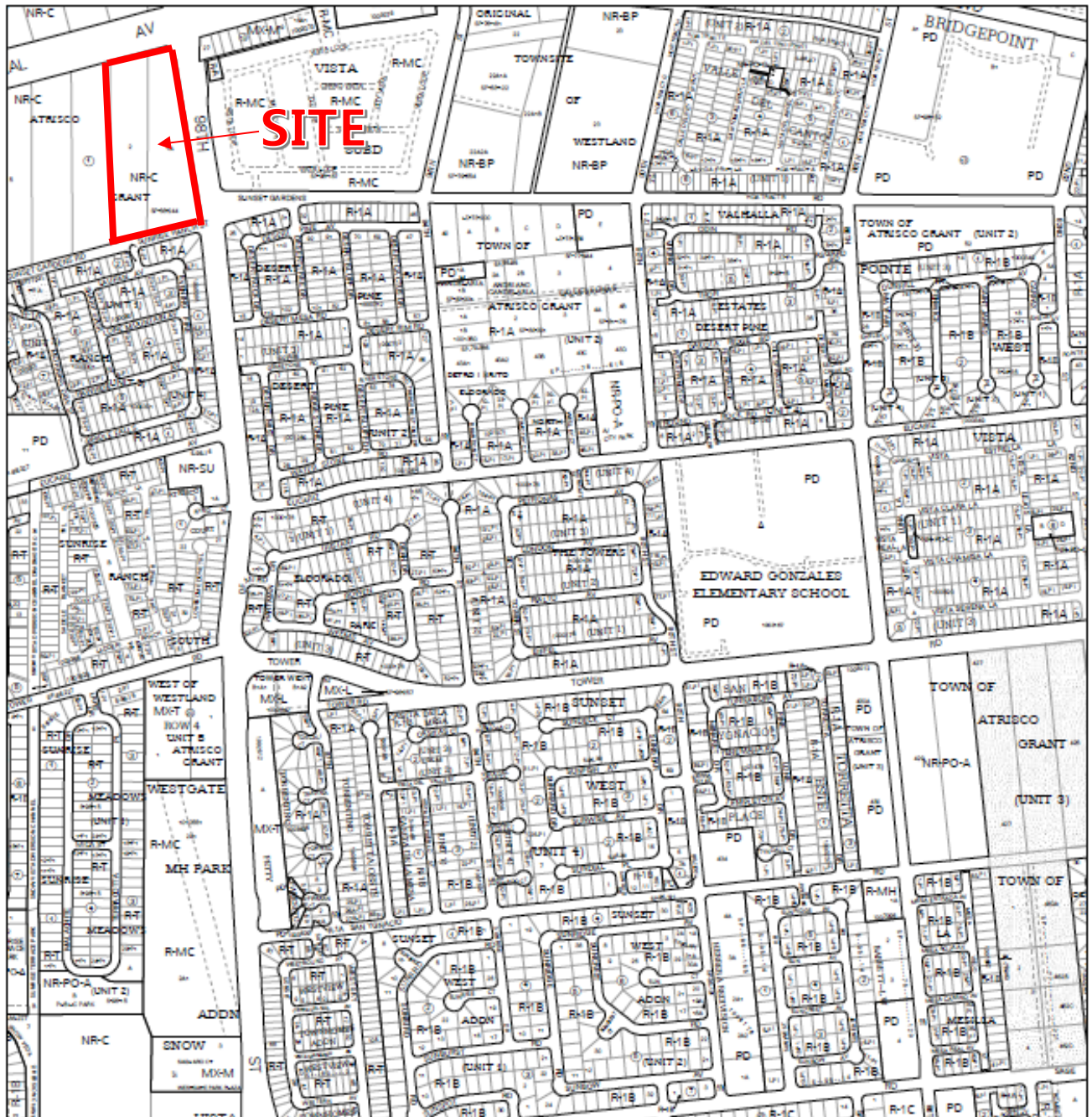
WEIR CALCULATIONS

APPENDIX C

EXCERPTS FROM SAD 222 DRAINAGE ANALYSIS REPORT

SAD 222 STORM DRAIN AS-BUILTS

VICINITY MAP

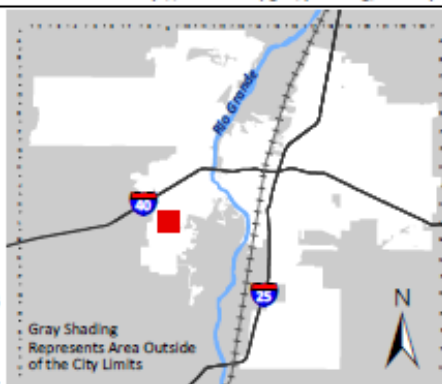


For more details about the Integrated Development Ordinance visit: <http://www.cabq.gov/planning/codes-policies-regulations/integrated-development-ordinance>

IDO Zone Atlas
May 2018



IDO Zoning information as of May 17, 2018
The Zone Districts and Overlay Zones
are established by the
Integrated Development Ordinance (IDO).



Zone Atlas Page:
L-09-Z

-  Easement
  Escarpment
-  Petroglyph National Monument
-  Areas Outside of City Limits
-  Airport Protection Overlay (APO) Zone
-  Character Protection Overlay (CPO) Zone
-  Historic Protection Overlay (HPO) Zone
-  View Protection Overlay (VPO) Zone

National Flood Hazard Layer FIRMette



Legend

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

Without Base Flood Elevation (BFE)

Zone AE, AO, AH, VE, AR

With BFE or Depth

Zone AE, AO, AH, VE, AR

Regulatory Floodway

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

Area of Minimal Flood Hazard

Zone X

Effective LOMRs

Area of Undetermined Flood Hazard

Zone D

Channel, Culvert, or Storm Sewer

Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance

Water Surface Elevation

Coastal Transect

Base Flood Elevation Line (BFE)

Limit of Study

Jurisdiction Boundary

Coastal Transect Baseline

Profile Baseline

Hydrographic Feature

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.

NO SCREEN

Effective LOMRs

Channel, Culvert, or Storm Sewer

Levee, Dike, or Floodwall

Cross Sections with 1% Annual Chance

Water Surface Elevation

Coastal Transect

Base Flood Elevation Line (BFE)

Limit of Study

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Coastal Transect Baseline

Profile Baseline

Hydrographic Feature

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No Digital Data Available

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

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Coastal Transect Baseline

Profile Baseline

Hydrographic Feature

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.

FIRM MAP

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 4/15/2019 at 1:17 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.

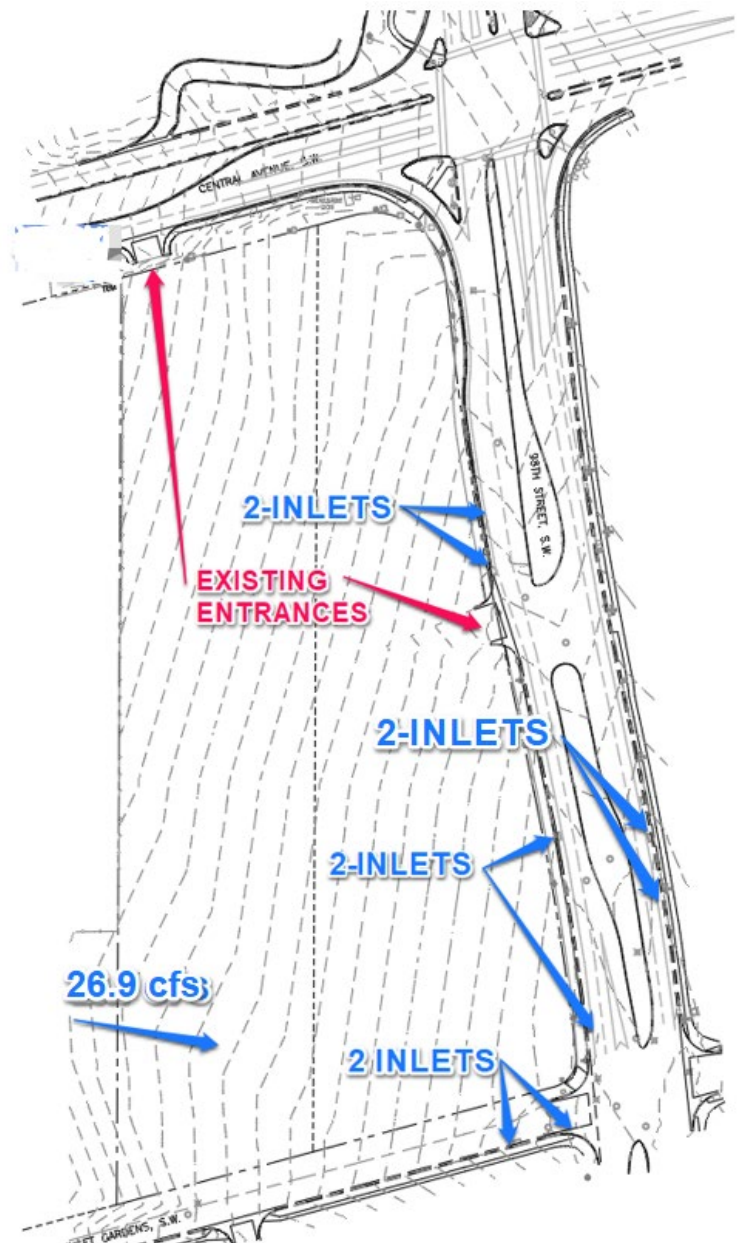
EXISTING CONDITIONS:

The site is located at the southwest corner of Central Blvd. SW and 98th St. SW, north of Sunset Gardens Rd. SW. The site is 8.67 acres and slopes from west to east and discharges to existing inlets in 98th St.

There are two existing entrances to the site that were constructed in 2017/2018 (one right-in/right-out access from Central Ave. and one full access from 98th St). Sunset Gardens Rd. has curb and sidewalk and two inlets on the south side. Central Ave. and 98th St. have curb and gutter and sidewalk on both sides (asphalt trail on west side in 98th St). There are four inlets on the west side of 98th St. and two on the east side

Offsite undeveloped flows of 26.9 cfs from the tracts to the west enter the site at the south end.

The storm drain and inlets in 98th Street and a 42" stub in Sunset Gardens Rd. were installed with the SAD 222 project (CPN 4188.91) and the inlets on the south side of Sunset Gardens Rd. were installed with the Sunrise Ranch subdivision to the south (CPN 645181).



Existing Conditions Exhibit



SAD 222 DRAINAGE ANALYSIS REPORT:

The SAD 222 Drainage Analysis report prepared by Larkin Group, dated September 12, 2000, dictates the allowable discharge rates to 98th Street and Sunset Gardens Rd. storm drain systems. The site is located in basin A1-D per below drainage basin map from the SAD 222 report. See Appendix C for excerpts from the SAD 222 report.



Basin Map from SAD 222 Report

- The allowable discharge to the 98th St. storm drain is 9.1 cfs from the site and 11.8 cfs street flow for a total of 20.9 cfs.
- The allowable discharge to the Sunset Gardens storm drain is 81.7 cfs from the site and 6.1 cfs street flow for a total of 87.8 cfs.
- The combined allowable discharge from Basin A1-D to the storm drain system in 98th St. is 108.7 cfs.

PROPOSED CONDITIONS:

This property will be developed with six buildings in phases. A detailed grading and drainage plan, including calculations for storm water quality pond volumes, will be provided as each phase develops. A right-in/right-out entrance will be constructed in 98th St. and an entrance, curb & gutter, sidewalk and a 42-inch storm drain extension and four inlets with connector pipes will be constructed on the north side of Sunset Gardens Rd.

The onsite storm waters shall be discharged to the adjacent storm drain system in 98th St. and Sunset Gardens Rd. via access drives and onsite storm drains connecting to the back of the street inlets.

The site is divided into three drainage basins and 100-yr, 6-hr storm water flows were calculated in AHYMO using NOAA Atlas 14 precipitation data. See Appendix A for a basin exhibit and the AHYMO input



and summary files and page 5 for a summary table of basin areas, water quality volumes and 100-year, 6-hr discharge rates and locations.

Offsite Drainage Basin:

The properties to the west, north of Sunset Gardens Rd., between 102nd St. and 98th St. will discharge 26.9 cfs undeveloped storm water flows and 55.2 cfs developed flows. The flows for the offsite basins were calculated on a cfs-per-acre basis per Tables 1 and 6 from SAD 222 in Appendix C.

The offsite storm flows drain to the south end of the site and then across the site to 98th St. In the interim condition, the offsite flows (26.9 cfs) will be accepted to a ponding area west of the entrance and then overflow to Sunset Gardens Rd. A wall around the entrance curb return adjacent to the pond shall be constructed to permit the storm water elevation to build up to an average of eight inches high and then spill over a 16-foot long weir onto the entrance and out to Sunset Gardens Rd. See Appendix B for weir calculations.

Until the offsite property further develops, a cross-lot drainage easement will be granted over this tract by document. Once the offsite properties develop, they will direct the storm water toward Sunset Gardens per the SAD 222 report, and this drainage easement will be eliminated.

As each phase of this property is developed, the offsite drainage impacting the specific phase shall be assessed and addressed as part of the Hydrology submittal for building permit. The conceptual grading plan included in the back pocket shows how the fully developed tract will route the offsite flows through the site.

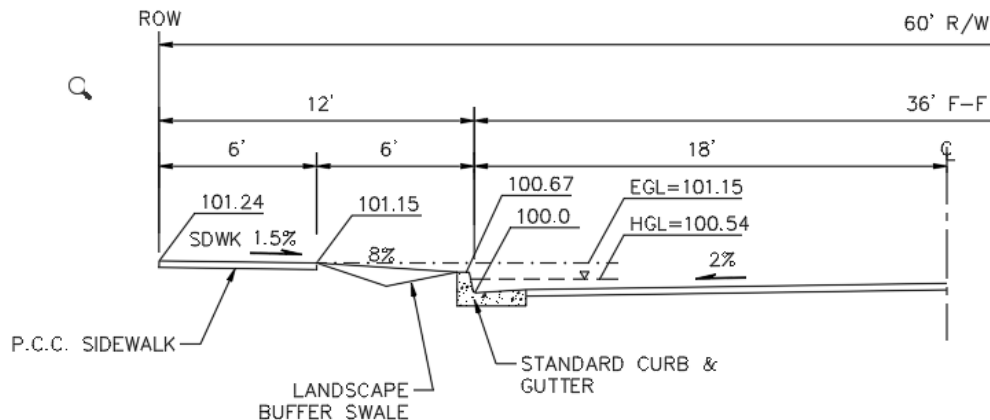


**Offsite Drainage Path (Bernalillo
County 2-foot Contours)**



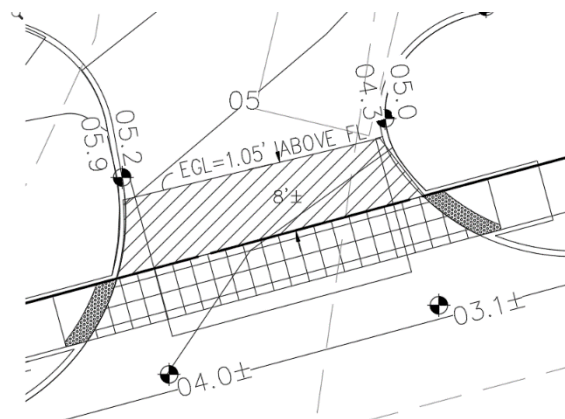
Sunset Gardens Rd. Street Capacity:

The water depth in Sunset Gardens Rd. for the fully developed condition was calculated to determine the inlet capacities. The street capacity calculations are included in Appendix B. The EGL depth is up to 0.24' higher than the right-of-way grade based on a typical street cross section with a two-percent cross slope in the landscape buffer and sidewalk. Therefore, as discussed with and approved by City Hydrology and Transportation, an 8% cross slope shall be provided in the landscape buffer to contain the EGL within the right-of-way.



**SUNSET GARDENS RD SW
SECTION LOOKING EAST AT INLET 1**

Should a hydraulic jump occur at the entrance, the water would back up to the curb return during the peak of the storm and then drain out to Sunset Gardens Rd. The entrance slopes up to the site, so no buildings would be flooded. A street section through the entrance is included in Appendix B showing that the water would back up to about eight feet behind the property line.



**ENTRANCE AT SUNSET GARDENS RD SW
WATER DEPTH AT FULLY DEVELOPED CONDITIONS**



Storm Drain & Water Quality Ponds:

The site will direct minor flows via the access drives to 98th St. and Sunset Gardens Rd, and the majority will drain into an onsite storm drain system which will connect to one existing inlet in 98th St. and two new inlets in Sunset Gardens Rd. The 42" storm drain in Sunset Garden Rd. shall be extended and four new inlets installed. Inlet capacity and storm drain calculations are included in Appendix B and the summary table on page 5 outlines the basin areas, land treatments, storm water quality (WQ) volumes and storm water flow rates and discharge locations. The storm drain calculations were based on a starting HGL as noted on the storm drain as--builts (Appendix C) with datum adjustment—HGL=91.13+2.7=93.83. A total of 107.2 cfs shall be directed to the 98th St./Sunset Gardens Rd. storm drain system, which is less than the 108.7 cfs allowable discharge.

BASIN AREA, LAND TREATMENT AND STORM FLOW SUMMARY TABLE

BASIN	AREA AC	AREA SQ. MI.	%A	%B	%C	%D	WQ VOL (CF)	FROM AHYMO	DISCHARGE LOCATION			
								Q100YR-6HR CFS	98TH ST		SUNSET GARDENS	
A	2.39	0.00373	0	10	10	80	2,360	9.3	9.3	Back of ex. inlet		
B	4.02	0.00628	0	5	6	89	4,416	16.3	1.0	Surface	15.3	Back of new inlet
C	2.26	0.00353	0	15	15	70	1,953	8.3	0.6	Surface	5.6	Back of new inlets
											2.3	Surface
OFFSITE DEVELOPED	13.47										55.2	*
STREET FLOW 98TH ST										11.8	*	
STREET FLOW SUNSET											6.1	*
TOTAL TO SD									22.7		84.5	**
TOTAL IN 98TH ST SD = 107.2 CFS < 108.7 CFS ALLOWABLE PER SAD 222												

*FROM SAD 222

**INCLUDES 6.6 CFS BYPASS TO
DOWNSTREAM INLETS IN 98TH



CONCLUSIONS:

This will be a phased development with six buildings. A detailed grading and drainage plan will be provided as each phase develops, and the offsite storm water flows crossing the site shall be addressed with each phase. Until the offsite tracts develop, a cross-lot drainage easement shall be in place.

The site will drain in accordance with the requirements listed in the SAD 222 report. A total of 107.2 cfs shall be directed to the 98th St./Sunset Gardens Rd. storm drain system, which is less than the 108.7 cfs allowable discharge.

The following drainage-related improvements shall be required:

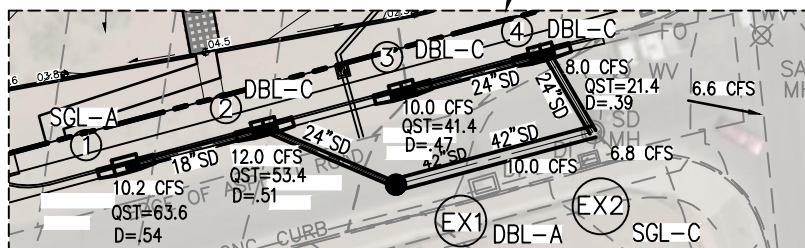
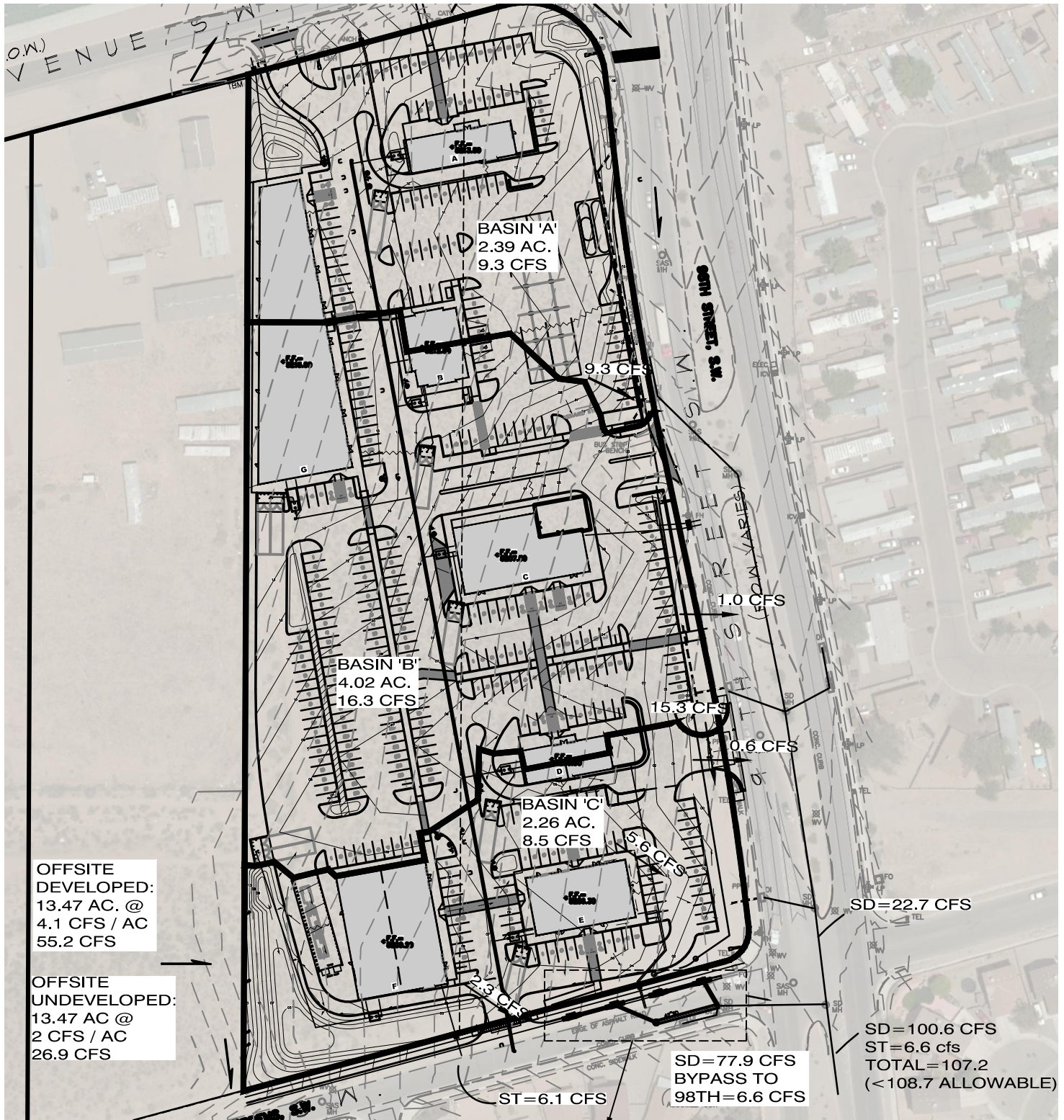
- Right-in/right-out entrance in 98th St.
- Connection to one existing inlet in 98th St.
- Entrance, curb & gutter, sidewalk and paving on north side in Sunset Gardens Rd.
- Street cross section shall have an 8% slope in the landscape buffer area to contain the EGL within the street right-of-way.
- 42-inch storm drain extension with four inlets in Sunset Gardens Rd.
- Connections to two new inlets in Sunset Gardens Rd.
- Weir overflow structure to direct offsite storm waters to Sunset Gardens Rd. from the pond west of the entrance.
- A cross-lot drainage easement for interim offsite drainage from the west properties.
- Water quality ponds as required with each building phase.



BASIN EXHIBIT

AHYMO DRAINAGE CALCULATIONS





STORM DRAIN & INLET DETAIL

BASIN EXHIBIT MILAGRO EL MERCADO



NTS



NOAA Atlas 14, Volume 1, Version 5
Location name: Albuquerque, New Mexico, USA*
Latitude: 35.0706°, Longitude: -106.7449°
Elevation: 5229.87 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.169 (0.146-0.197)	0.220 (0.188-0.256)	0.295 (0.252-0.344)	0.354 (0.301-0.411)	0.435 (0.368-0.504)	0.497 (0.420-0.577)	0.564 (0.472-0.653)	0.634 (0.527-0.734)	0.729 (0.600-0.845)	0.805 (0.658-0.933)
10-min	0.258 (0.221-0.301)	0.334 (0.287-0.390)	0.449 (0.383-0.524)	0.539 (0.459-0.625)	0.662 (0.560-0.767)	0.757 (0.638-0.877)	0.858 (0.718-0.994)	0.965 (0.802-1.12)	1.11 (0.913-1.29)	1.23 (1.00-1.42)
15-min	0.320 (0.274-0.372)	0.415 (0.355-0.483)	0.557 (0.475-0.649)	0.668 (0.569-0.775)	0.820 (0.694-0.951)	0.938 (0.792-1.09)	1.06 (0.890-1.23)	1.20 (0.994-1.39)	1.38 (1.13-1.60)	1.52 (1.24-1.76)
30-min	0.430 (0.370-0.502)	0.558 (0.478-0.650)	0.750 (0.640-0.874)	0.900 (0.766-1.04)	1.11 (0.934-1.28)	1.26 (1.07-1.47)	1.43 (1.20-1.66)	1.61 (1.34-1.87)	1.85 (1.53-2.15)	2.05 (1.67-2.37)
60-min	0.533 (0.457-0.621)	0.691 (0.592-0.805)	0.928 (0.792-1.08)	1.11 (0.948-1.29)	1.37 (1.16-1.59)	1.56 (1.32-1.81)	1.77 (1.48-2.05)	1.99 (1.66-2.31)	2.29 (1.89-2.66)	2.53 (2.07-2.93)
2-hr	0.615 (0.526-0.727)	0.786 (0.673-0.932)	1.04 (0.889-1.23)	1.25 (1.06-1.47)	1.53 (1.29-1.80)	1.77 (1.48-2.06)	2.01 (1.67-2.35)	2.27 (1.87-2.64)	2.63 (2.14-3.06)	2.92 (2.36-3.41)
3-hr	0.662 (0.572-0.779)	0.842 (0.725-0.991)	1.10 (0.952-1.30)	1.31 (1.13-1.54)	1.60 (1.36-1.87)	1.84 (1.56-2.14)	2.09 (1.76-2.43)	2.35 (1.96-2.74)	2.72 (2.24-3.17)	3.02 (2.46-3.53)
6-hr	0.763 (0.665-0.889)	0.962 (0.841-1.12)	1.24 (1.08-1.44)	1.46 (1.27-1.70)	1.76 (1.52-2.04)	2.00 (1.72-2.31)	2.25 (1.92-2.60)	2.51 (2.13-2.90)	2.87 (2.41-3.32)	3.16 (2.63-3.66)
12-hr	0.854 (0.751-0.975)	1.08 (0.948-1.23)	1.37 (1.20-1.56)	1.60 (1.40-1.82)	1.90 (1.66-2.16)	2.14 (1.85-2.43)	2.38 (2.06-2.71)	2.64 (2.26-3.00)	2.99 (2.53-3.39)	3.27 (2.75-3.72)
24-hr	0.957 (0.849-1.09)	1.20 (1.07-1.36)	1.50 (1.33-1.70)	1.74 (1.54-1.97)	2.07 (1.82-2.34)	2.32 (2.04-2.61)	2.58 (2.26-2.90)	2.84 (2.47-3.19)	3.19 (2.76-3.59)	3.47 (2.98-3.90)
2-day	1.01 (0.905-1.14)	1.27 (1.13-1.43)	1.59 (1.42-1.78)	1.84 (1.64-2.06)	2.18 (1.93-2.43)	2.43 (2.15-2.72)	2.70 (2.38-3.01)	2.97 (2.60-3.32)	3.33 (2.90-3.72)	3.61 (3.12-4.04)
3-day	1.13 (1.02-1.25)	1.41 (1.27-1.56)	1.74 (1.58-1.93)	2.01 (1.81-2.21)	2.36 (2.12-2.60)	2.63 (2.36-2.90)	2.91 (2.60-3.20)	3.18 (2.83-3.51)	3.55 (3.15-3.91)	3.83 (3.38-4.23)
4-day	1.25 (1.14-1.36)	1.55 (1.42-1.69)	1.90 (1.74-2.07)	2.17 (1.99-2.37)	2.55 (2.32-2.77)	2.83 (2.57-3.08)	3.11 (2.82-3.39)	3.39 (3.07-3.70)	3.76 (3.39-4.11)	4.04 (3.63-4.42)
7-day	1.43 (1.31-1.56)	1.78 (1.63-1.93)	2.16 (1.98-2.35)	2.46 (2.25-2.67)	2.85 (2.61-3.09)	3.15 (2.88-3.41)	3.44 (3.14-3.73)	3.72 (3.39-4.03)	4.08 (3.71-4.43)	4.35 (3.94-4.72)
10-day	1.58 (1.45-1.72)	1.96 (1.80-2.14)	2.40 (2.21-2.61)	2.75 (2.52-2.98)	3.20 (2.93-3.46)	3.54 (3.24-3.83)	3.88 (3.54-4.19)	4.21 (3.84-4.56)	4.65 (4.21-5.03)	4.97 (4.49-5.38)
20-day	1.99 (1.82-2.17)	2.47 (2.27-2.69)	3.00 (2.75-3.26)	3.40 (3.12-3.68)	3.90 (3.58-4.23)	4.27 (3.91-4.62)	4.62 (4.23-5.00)	4.95 (4.52-5.36)	5.37 (4.89-5.81)	5.66 (5.16-6.14)
30-day	2.38 (2.19-2.58)	2.96 (2.71-3.20)	3.56 (3.27-3.85)	4.00 (3.67-4.32)	4.56 (4.18-4.91)	4.95 (4.53-5.33)	5.32 (4.87-5.73)	5.67 (5.18-6.10)	6.09 (5.56-6.55)	6.38 (5.82-6.87)
45-day	2.91 (2.68-3.14)	3.60 (3.32-3.89)	4.28 (3.96-4.62)	4.77 (4.41-5.14)	5.36 (4.96-5.78)	5.77 (5.33-6.21)	6.13 (5.67-6.60)	6.45 (5.96-6.94)	6.81 (6.30-7.33)	7.03 (6.51-7.55)
60-day	3.35 (3.10-3.63)	4.15 (3.83-4.49)	4.94 (4.57-5.34)	5.51 (5.10-5.95)	6.20 (5.73-6.68)	6.66 (6.16-7.18)	7.09 (6.55-7.64)	7.47 (6.90-8.05)	7.89 (7.30-8.52)	8.16 (7.56-8.80)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

[Back to Top](#)

PF graphical

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*
*           MERCADO EL MILAGRO
*           HYDROLOGIC MODEL--DEVELOPED CONDITIONS
*           BY: ASA NILSSON-WEBER, ISAACSON & ARFMAN
*           JUNE 27, 2019
*****
*
*           PRECIPITATION (FROM NOAA ATLAS 14; LAT:35.6212° LONG:-106.0057°)
*           P15 =          0"
*           P60 =          1.77"
*           P360 =         2.25"
*           P1440 =         2.58"
*
*****
*
START          TIME=0.0 HR   PUNCH CODE=0
LOCATION         ALBUQUERQUE
RAINFALL       TYPE=2 RAIN QUARTER=0 IN
               RAIN ONE=1.77 IN  RAIN SIX=2.25 IN
               RAIN DAY=2.58 IN  DT=0.05 HRS
*
*****
*           HYDROLOGIC MODEL FOR
*S           * * * * * * * * * * PROPOSED CONDITIONS * * * * *
*S           100-YEAR, 24-HOUR STORM
*S           BASIN A
COMPUTE NM HYD      ID=1  HYD NO=100  DA=0.00373 SQ MI
                   %A=0  %B=10  %C=10  %D=80
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                   MASS RAINFALL=-1
PRINT HYD          ID=1 CODE=1
*S           BASIN B
COMPUTE NM HYD      ID=2  HYD NO=200  DA=0.00628 SQ MI
                   %A=0  %B=5  %C=6  %D=89
                   TP=-0.1333 HR
                   MASS RAINFALL=-1
PRINT HYD          ID=2 CODE=1
*S           BASIN C
COMPUTE NM HYD      ID=3  HYD NO=300  DA=0.003533 SQ MI
                   %A=0  %B=15  %C=15  %D=70
                   TP=-0.1333 HR
                   MASS RAINFALL=-1
PRINT HYD          ID=3 CODE=1
FINISH

```


RUN DATE (MON/DAY/YR) =06/26/2019
USER NO.= AHYMO_Temp_User:20122010

RAIN24= 2.580

STREET CAPACITY CALCULATIONS

INLET CAPACITY CALCULATIONS

STORM DRAIN CALCULATIONS

WEIR CALCULATIONS



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Monday, Jul 29 2019

INLET 1 - SUNSET GARDEN - 2.9%

User-defined

Invert Elev (ft) = 100.00
Slope (%) = 2.90
N-Value = 0.016

Calculations

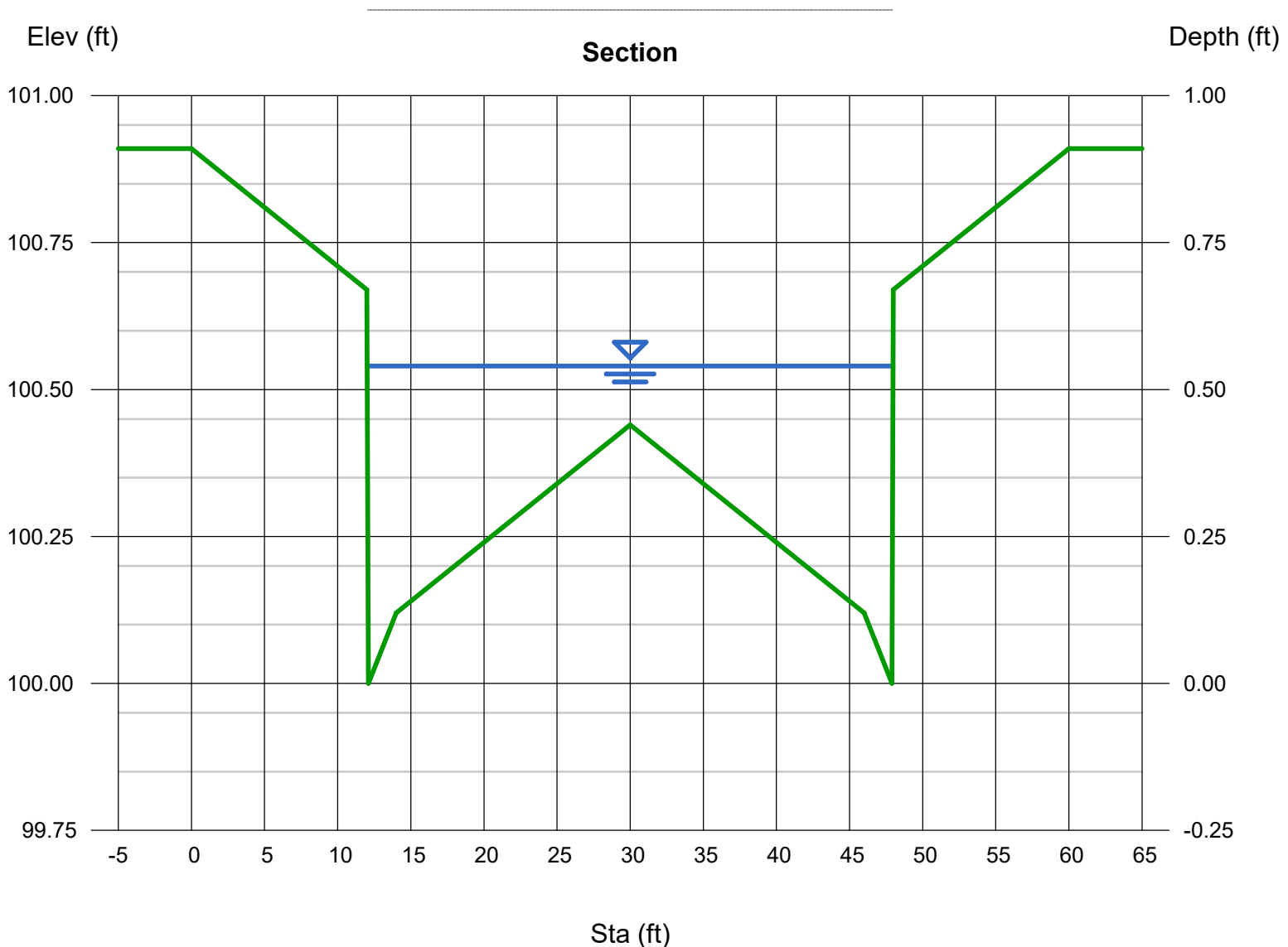
Compute by: Known Q
Known Q (cfs) = 63.60

Highlighted

Depth (ft) = 0.54
Q (cfs) = 63.60
Area (sqft) = 10.19
Velocity (ft/s) = 6.24
Wetted Perim (ft) = 36.91
Crit Depth, Yc (ft) = 0.74
Top Width (ft) = 35.96
EGL (ft) = 1.15

(Sta, El, n)-(Sta, El, n)...

(0.00, 100.91)-(12.00, 100.67, 0.017)-(12.10, 100.00, 0.013)-(14.00, 100.12, 0.013)-(30.00, 100.44, 0.017)-(46.00, 100.12, 0.017)-(47.90, 100.00, 0.013)
-(48.00, 100.67, 0.013)-(60.00, 100.91, 0.017)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Monday, Jul 29 2019

INLET 2 - SUNSET GARDEN - 2.9%

User-defined

Invert Elev (ft) = 100.00
Slope (%) = 2.90
N-Value = 0.016

Calculations

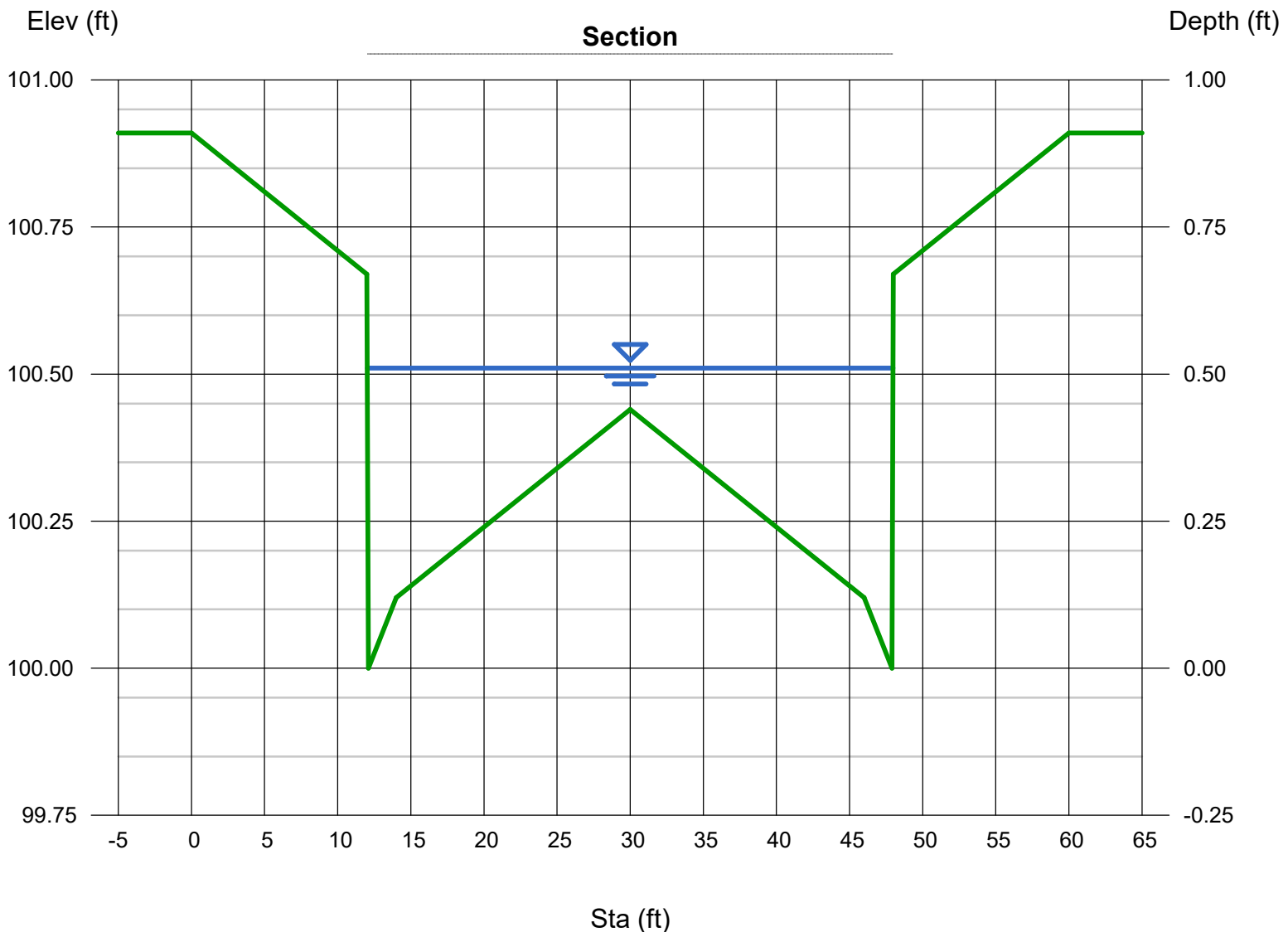
Compute by: Known Q
Known Q (cfs) = 53.40

Highlighted

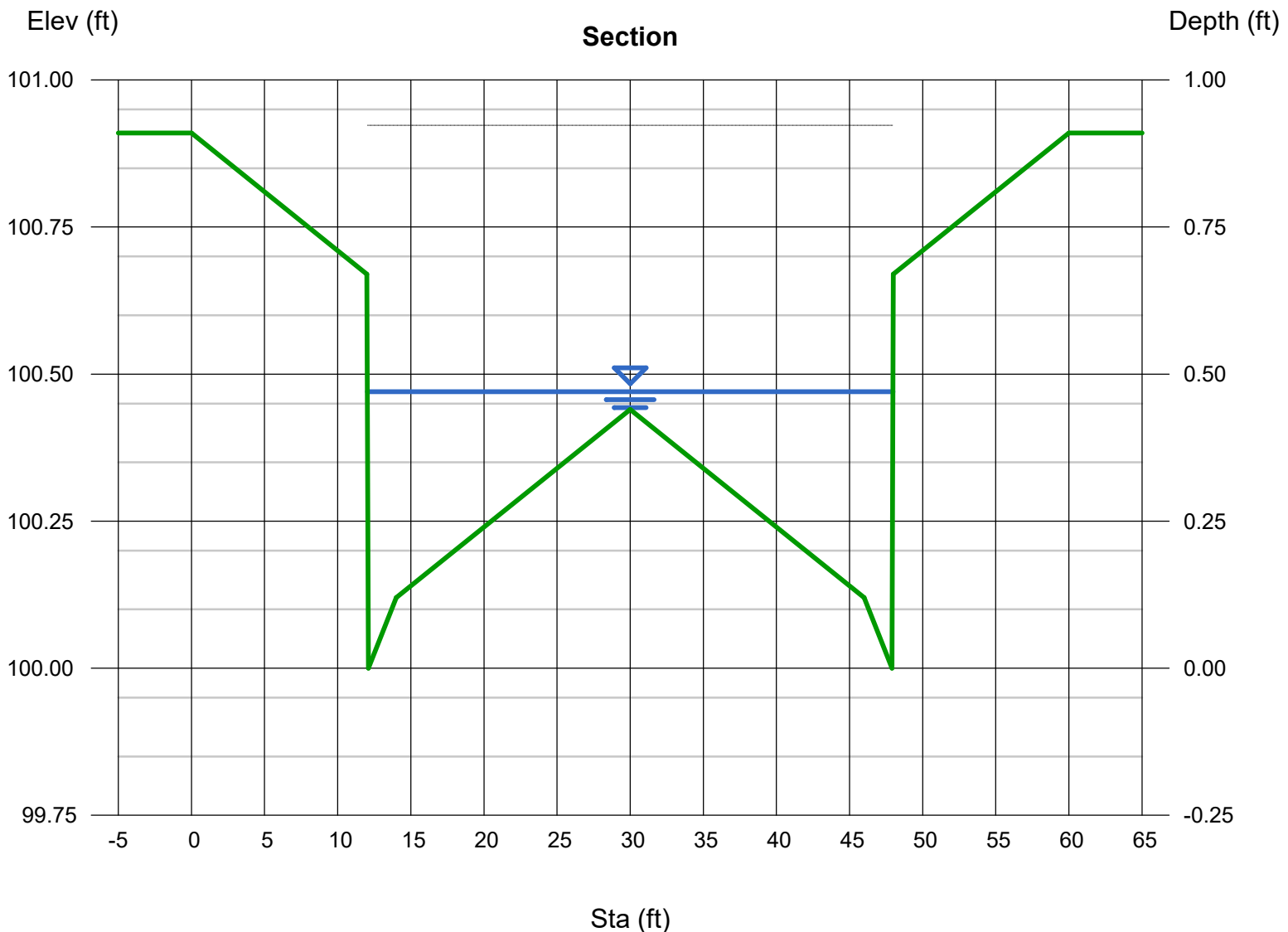
Depth (ft) = 0.51
Q (cfs) = 53.40
Area (sqft) = 9.11
Velocity (ft/s) = 5.86
Wetted Perim (ft) = 36.85
Crit Depth, Yc (ft) = 0.67
Top Width (ft) = 35.95
EGL (ft) = 1.04

(Sta, El, n)-(Sta, El, n)...

(0.00, 100.91)-(12.00, 100.67, 0.020)-(12.10, 100.00, 0.013)-(14.00, 100.12, 0.013)-(30.00, 100.44, 0.017)-(46.00, 100.12, 0.017)-(47.90, 100.00, 0.013)
-(48.00, 100.67, 0.013)-(60.00, 100.91, 0.020)



Monday, Jul 29 2019



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Monday, Jul 29 2019

INLETS 4 & EX2- SUNSET GARDEN - 2.9%

User-defined

Invert Elev (ft) = 100.00
Slope (%) = 2.90
N-Value = 0.016

Calculations

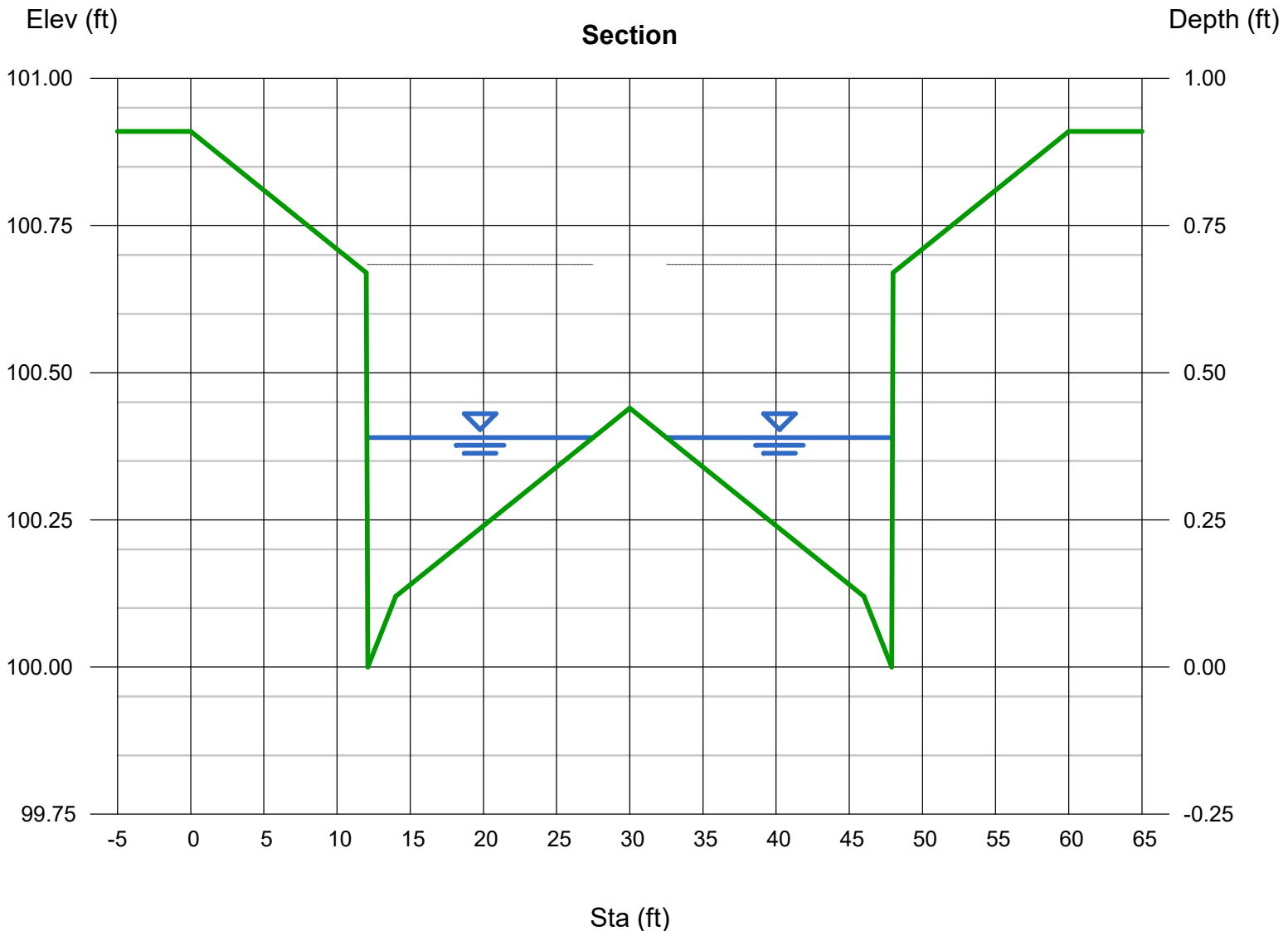
Compute by: Known Q
Known Q (cfs) = 21.40

Highlighted

Depth (ft) = 0.39
Q (cfs) = 21.40
Area (sqft) = 4.92
Velocity (ft/s) = 4.35
Wetted Perim (ft) = 31.60
Crit Depth, Yc (ft) = 0.48
Top Width (ft) = 30.92
EGL (ft) = 0.68

(Sta, El, n)-(Sta, El, n)...

(0.00, 100.91)-(12.00, 100.67, 0.020)-(12.10, 100.00, 0.013)-(14.00, 100.12, 0.013)-(30.00, 100.44, 0.017)-(46.00, 100.12, 0.017)-(47.90, 100.00, 0.013)
-(48.00, 100.67, 0.013)-(60.00, 100.91, 0.020)



Channel Report

Hydraflow Express Extension for Autodesk® AutoCAD® Civil 3D® by Autodesk, Inc.

Friday, Sep 6 2019

ENTRANCE AT SUNSET GARDEN - 2.9%

User-defined

Invert Elev (ft) = 100.00
Slope (%) = 2.90
N-Value = 0.015

Calculations

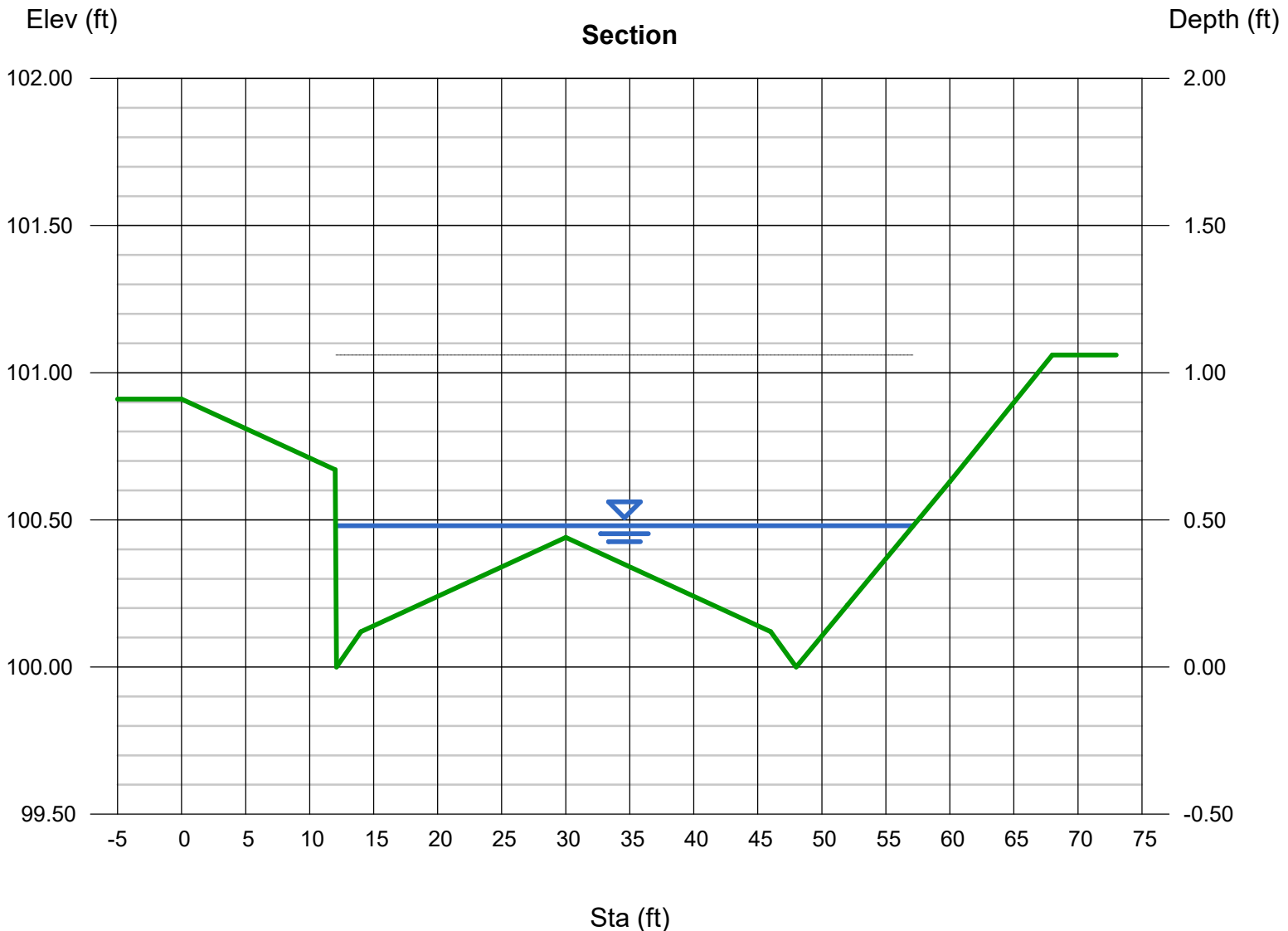
Compute by: Known Q
Known Q (cfs) = 62.60

Highlighted

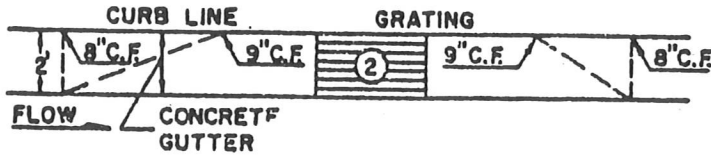
Depth (ft) = 0.48
Q (cfs) = 62.60
Area (sqft) = 10.25
Velocity (ft/s) = 6.11
Wetted Perim (ft) = 45.55
Crit Depth, Yc (ft) = 0.65
Top Width (ft) = 45.11
EGL (ft) = 1.06

(Sta, El, n)-(Sta, El, n)...

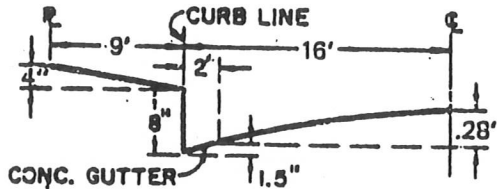
(0.00, 100.91)-(12.00, 100.67, 0.017)-(12.10, 100.00, 0.013)-(14.00, 100.12, 0.013)-(30.00, 100.44, 0.017)-(46.00, 100.12, 0.013)-(48.00, 100.00, 0.013)
-(52.00, 100.21, 0.017)-(60.00, 100.63, 0.017)-(68.00, 101.06, 0.017)



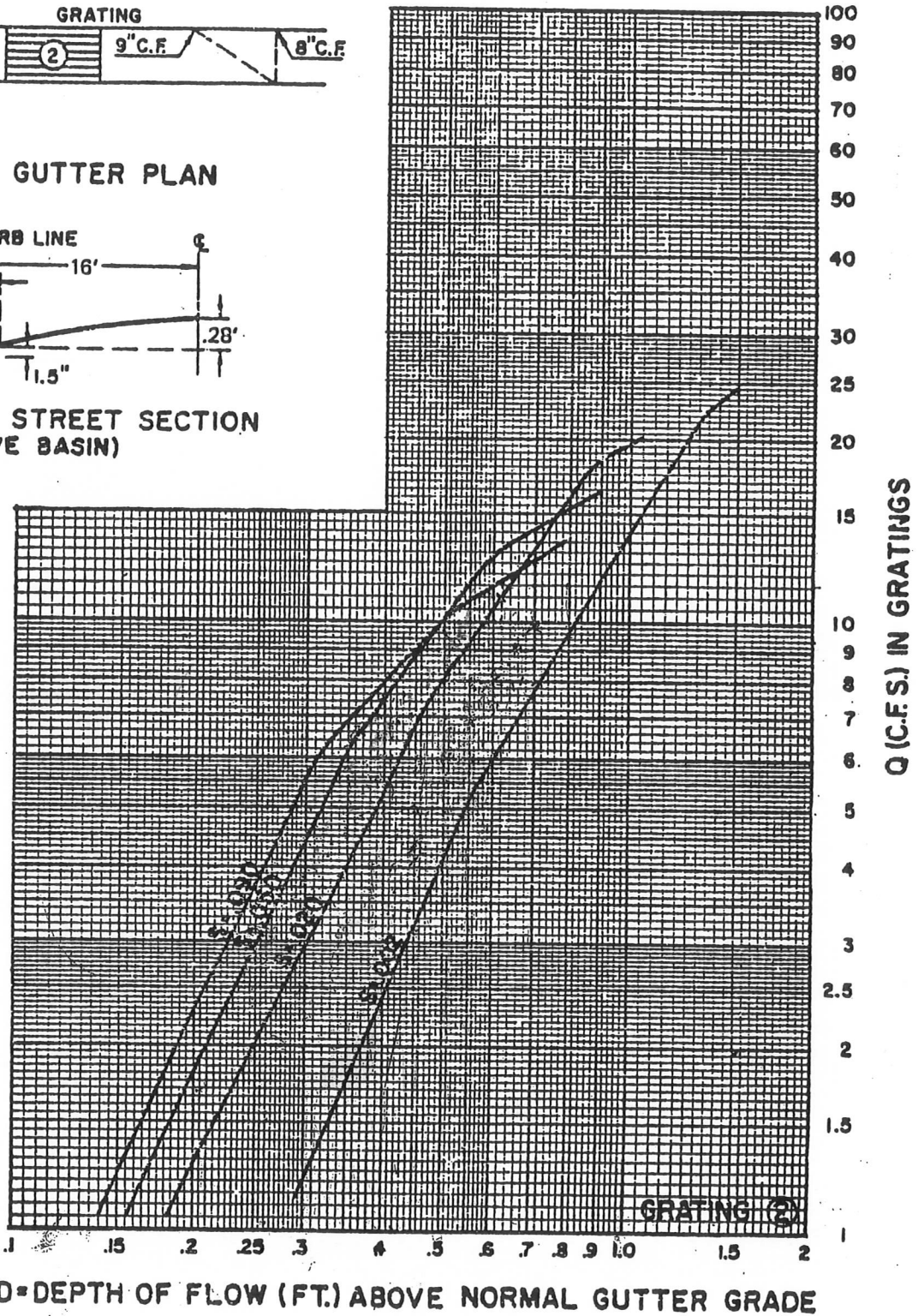
GRATING CAPACITIES FOR TYPE "A", "C" and "D"



GRATING & GUTTER PLAN



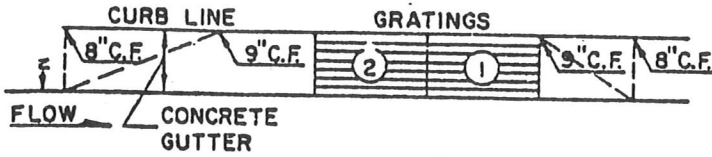
TYPICAL HALF STREET SECTION
(ABOVE BASIN)



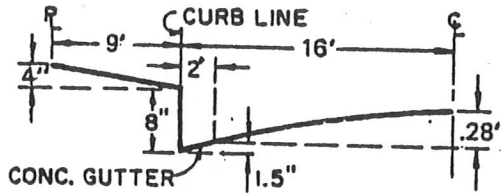
D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

GRATING CAPACITIES FOR TYPE DOUBLE

"C," AND "D"



GRATING & GUTTER PLAN

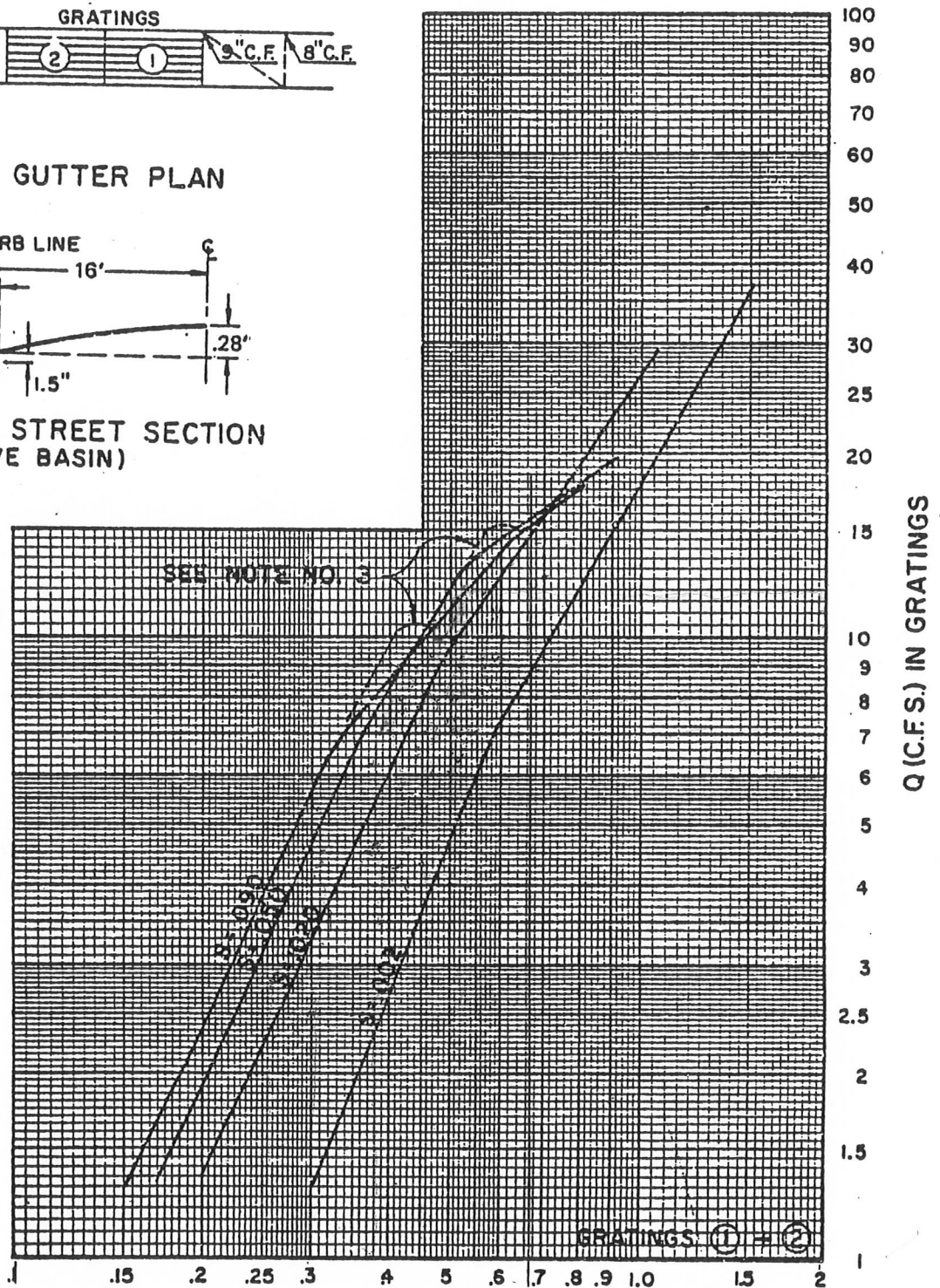


TYPICAL HALF STREET SECTION (ABOVE BASIN)

Inlet (2)
 $Q_{st} = 53.4$
 $d = .57$
 $Q_{int} = 12.0$

Inlet (3) & 1
 $Q_{st} = 41.4$
 $d = .47$
 $Q_{int} = 10$

Inlet (4)
 $Q_{st} = 21.4$
 $d = .39$
 $Q_{int} = 8.0$

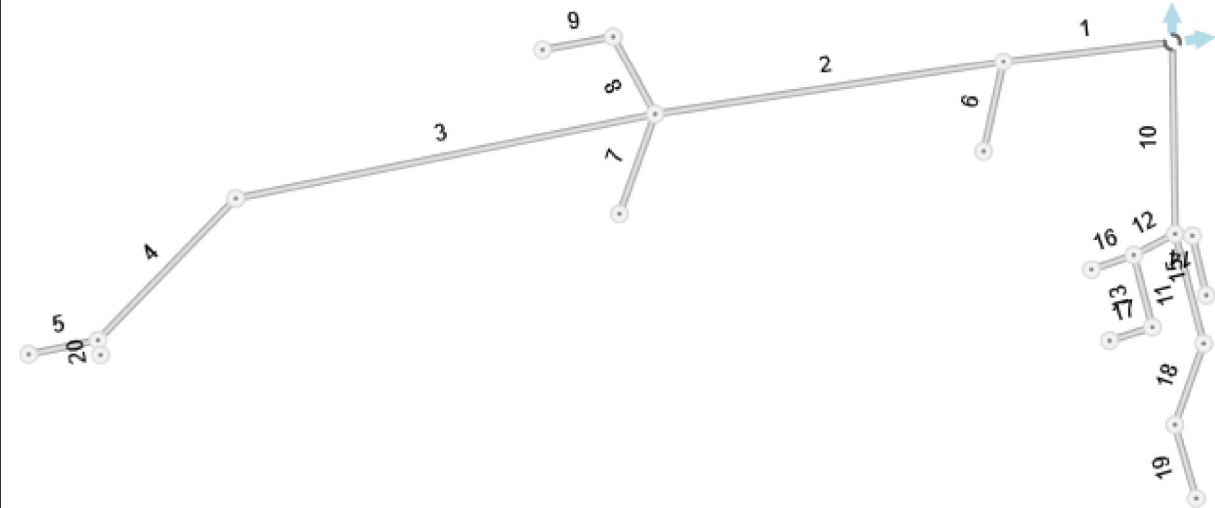


D = DEPTH OF FLOW (FT.) ABOVE NORMAL GUTTER GRADE

Plan View

Stormwater Studio 2018 v 1.0.0.0

Project Name: Enter Project Name...
07-30-2019



Energy Grade Line Calculations

Stormwater Studio 2018 v 1.0.0.0

Project Name: Enter Project Name...

07-30-2019

Line No	Line Size (in)	Q (cfs)	Downstream							Length (ft)	Upstream							Pipe		Junction		
			Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)		Invert Elev (ft)	Depth (ft)	Area (sqft)	HGL Elev (ft)	Vel (ft/s)	Vel Head (ft)	EGL Elev (ft)	n Value	Energy Loss (ft)	HGLa Elev (ft)	EGLa Elev (ft)	Energy Loss (ft)
1	24	22.70	5186.50	2.00	3.14	5193.83	7.23	0.81	90.32	5194.64	5187.30	2.00	3.14	5194.74	7.23	0.81	5195.55	0.013	0.910	5194.96	5195.77	0.22
2	24	20.25	5187.30	2.00	3.14	5195.39	6.45	0.65	186.94	5196.03	5189.08	2.00	3.14	5196.88	6.45	0.65	5197.53	0.013	1.499	5197.14	5197.79	0.26
3	24	13.00	5189.08	2.00	3.14	5197.63	4.14	0.27	227.05	5197.90	5191.38	2.00	3.14	5198.38	4.14	0.27	5198.65	0.013	0.750	5198.50	5198.77	0.12
4	18	13.00	5191.38	1.50	1.77	5198.27	7.36	0.84	104.77	5199.11	5194.00	1.50	1.77	5199.87	7.36	0.84	5200.71	0.013	1.606	5200.32	5201.16	0.45
5	18	1.85	5198.70	1.50	1.77	5201.15	1.05	0.02	37.55	5201.17	5198.90	1.50	1.77	5201.16	1.05	0.02	5201.18	0.013	0.012	5201.17	5201.18	0.00
6	18	2.45	5187.30	1.50	1.77	5195.76	1.39	0.03	48.82	5195.79	5191.20	1.50	1.77	5195.78	1.39	0.03	5195.81	0.013	0.027	5195.79	5195.82	0.01
7	18	2.85	5189.60	1.50	1.77	5197.77	1.61	0.04	56.13	5197.81	5193.12	1.50	1.77	5197.81	1.61	0.04	5197.85	0.013	0.041	5197.81	5197.86	0.01
8	18	4.40	5189.08	1.50	1.77	5197.73	2.49	0.10	47.04	5197.83	5194.49	1.50	1.77	5197.81	2.49	0.10	5197.91	0.013	0.083	5197.87	5197.96	0.05
9	12	2.90	5194.49	1.00	0.79	5197.84	3.69	0.21	38.09	5198.05	5195.40	1.00	0.79	5198.09	3.69	0.21	5198.30	0.013	0.253	5198.13	5198.34	0.04
10	42	77.90	5185.00	3.50	9.62	5193.83	8.10	1.02	102.03	5194.85	5185.90	3.50	9.62	5194.44	8.10	1.02	5195.46	0.013	0.612	5195.06	5196.08	0.62
11	42	22.20	5185.89	3.50	9.62	5196.03	2.31	0.08	60.00	5196.11	5187.10	3.50	9.62	5196.06	2.31	0.08	5196.14	0.013	0.029	5196.10	5196.18	0.04
12	24	38.90	5190.90	2.00	3.12	5194.65	12.38	2.38	24.69	5197.03	5194.00	1.95 ²	3.12	5195.95	12.47	2.42	5198.37	0.013	0.689	5195.95	5198.37	0.00
13	24	20.40	5194.00	2.00	3.14	5197.97	6.49	0.66	39.40	5198.63	5195.00	2.00	3.14	5198.29	6.49	0.66	5198.95	0.013	0.321	5198.63	5199.29	0.34
14	18	16.80	5185.89	1.50	1.77	5195.24	9.51	1.41	9.17	5196.64	5193.50	1.50	1.77	5195.47	9.51	1.41	5196.88	0.013	0.235	5196.19	5197.59	0.72
15	18	10.00	5193.70	1.50	1.77	5197.29	5.66	0.50	32.31	5197.79	5194.10	1.50	1.77	5197.59	5.66	0.50	5198.09	0.013	0.293	5197.69	5198.19	0.10
16	18	10.50	5194.00	1.50	1.77	5198.04	5.94	0.55	23.67	5198.59	5194.50	1.50	1.77	5198.27	5.94	0.55	5198.82	0.013	0.237	5198.38	5198.93	0.11
17	18	10.40	5195.00	1.50	1.77	5198.96	5.89	0.54	23.87	5199.50	5195.50	1.50	1.77	5199.20	5.89	0.54	5199.74	0.013	0.234	5199.31	5199.85	0.11
18	18	22.20	5192.00	1.50	1.76	5194.71	12.57	2.45	45.58	5197.16	5196.00	1.48 ²	1.76	5197.48	12.60	2.47	5199.95	0.013	1.945	5197.48	5199.95	0.00
19	18	10.20	5196.30	1.50	1.77	5199.64	5.77	0.52	40.61	5200.15	5197.50	1.50	1.77	5200.02	5.77	0.52	5200.54	0.013	0.383	5200.12	5200.64	0.10
20	12	9.30	5194.00	1.00	0.79	5199.85	11.84	2.18	8.00	5202.03	5194.26	1.00	0.79	5200.40	11.84	2.18	5202.58	0.013	0.546	5200.84	5203.02	0.44

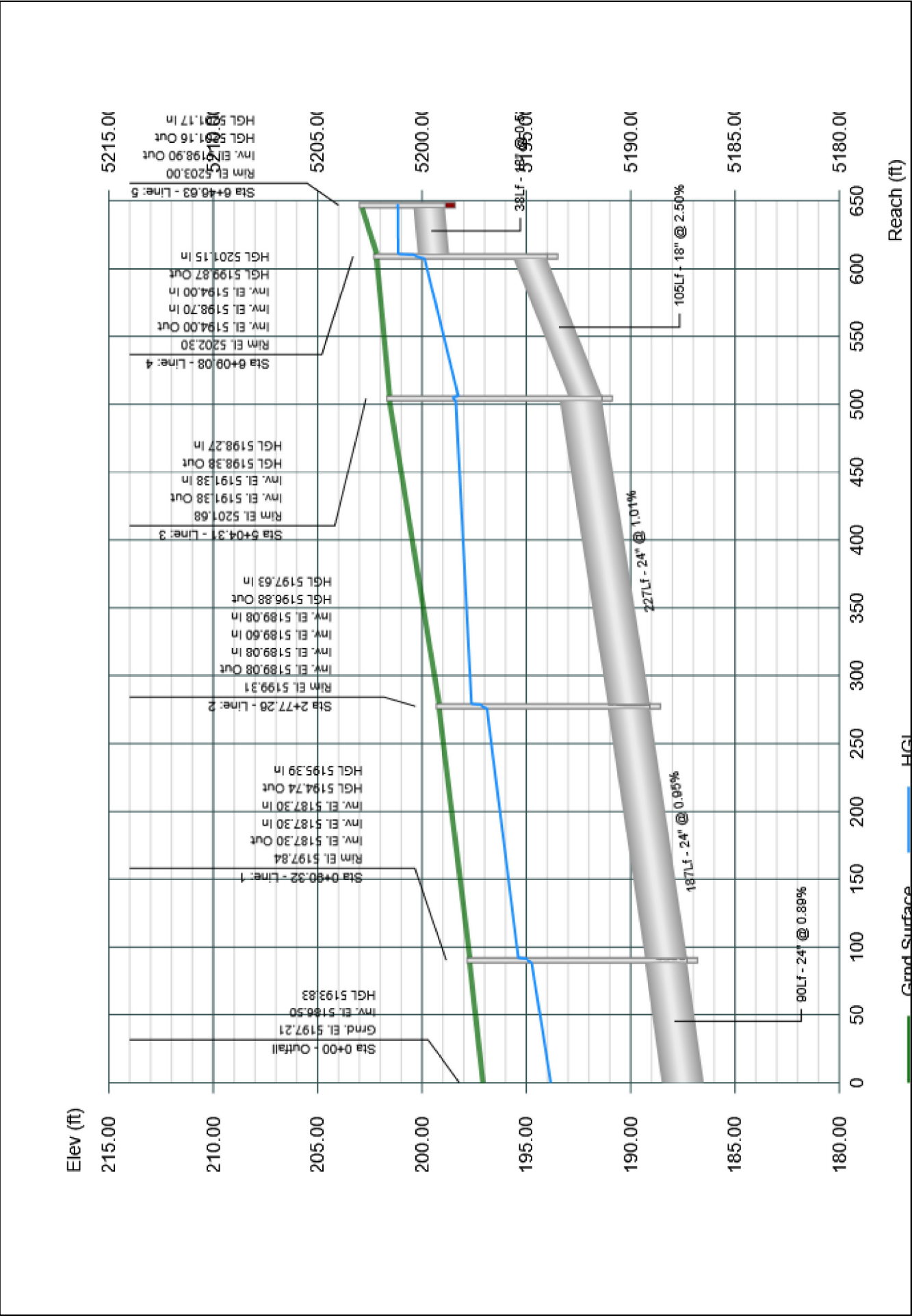
Notes: ² Critical depth.

Project File: 2306 SD.sws

Profile View

Stormwater Studio 2018 v 1.0.0.0

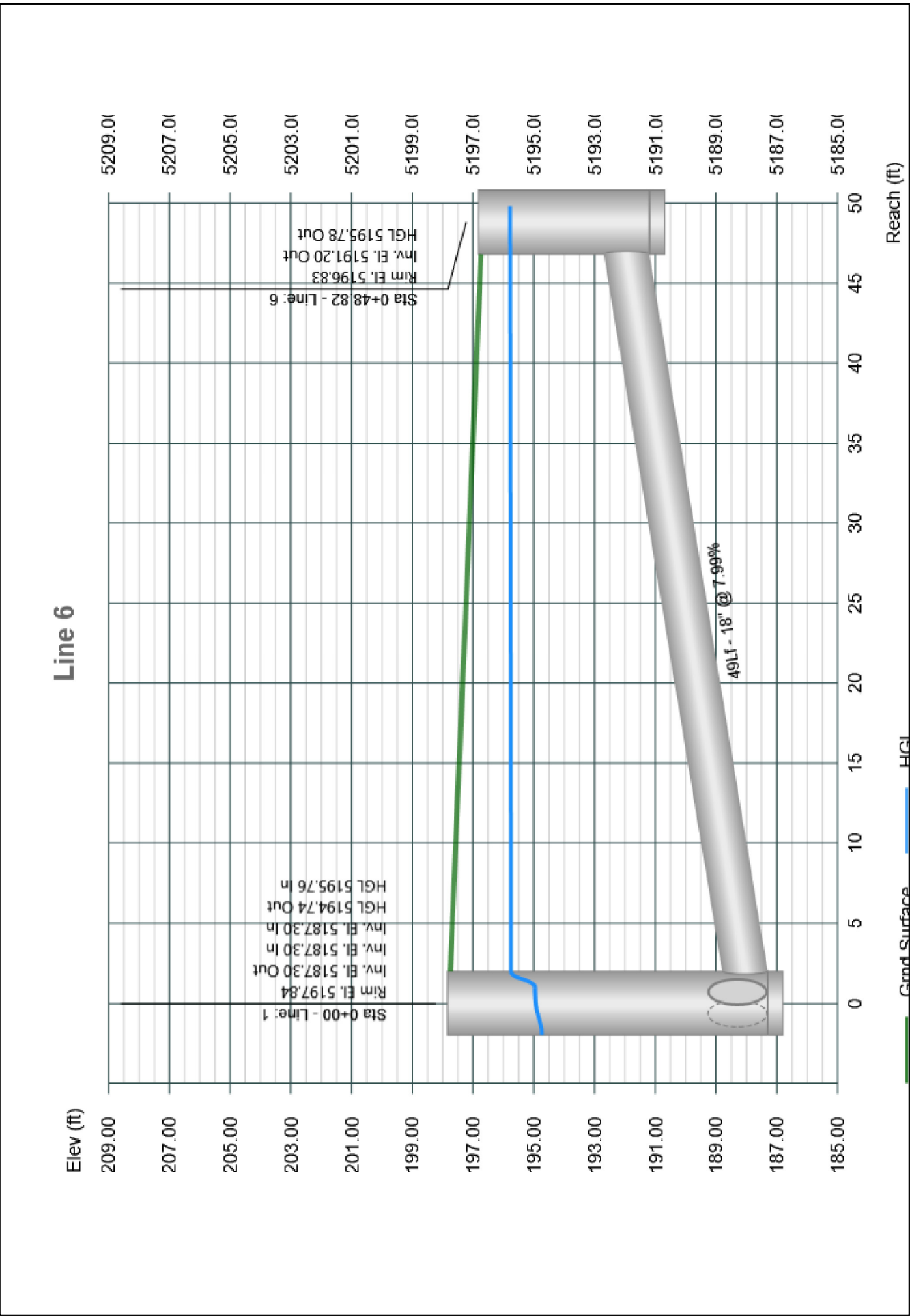
Project Name: Enter Project Name...
07-30-2019



Profile View

Stormwater Studio 2018 v 1.0.0.0

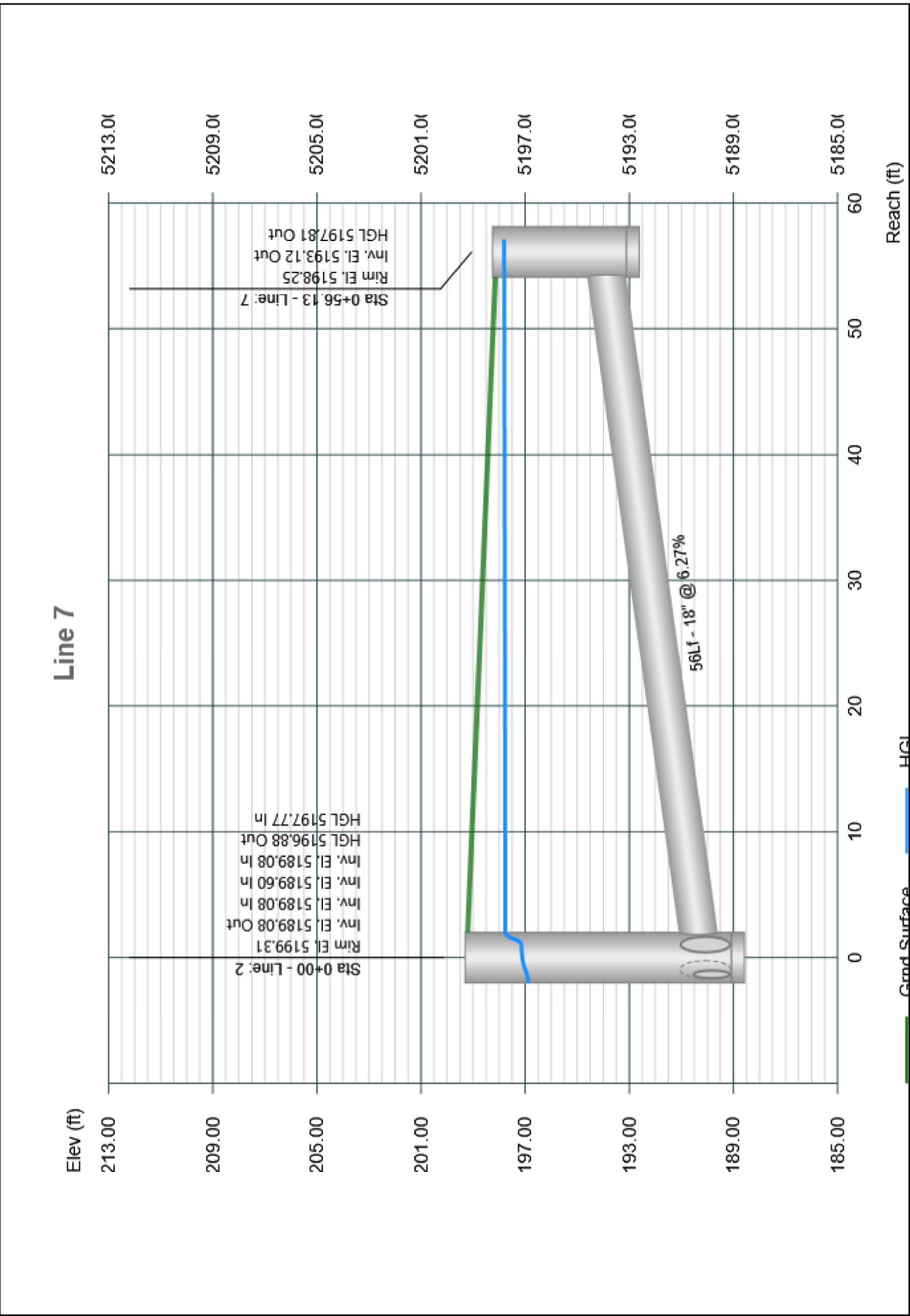
Project Name: Enter Project Name...
07-30-2019



Profile View

Stormwater Studio 2018 v 1.0.0.0

Project Name: Enter Project Name...
07-30-2019

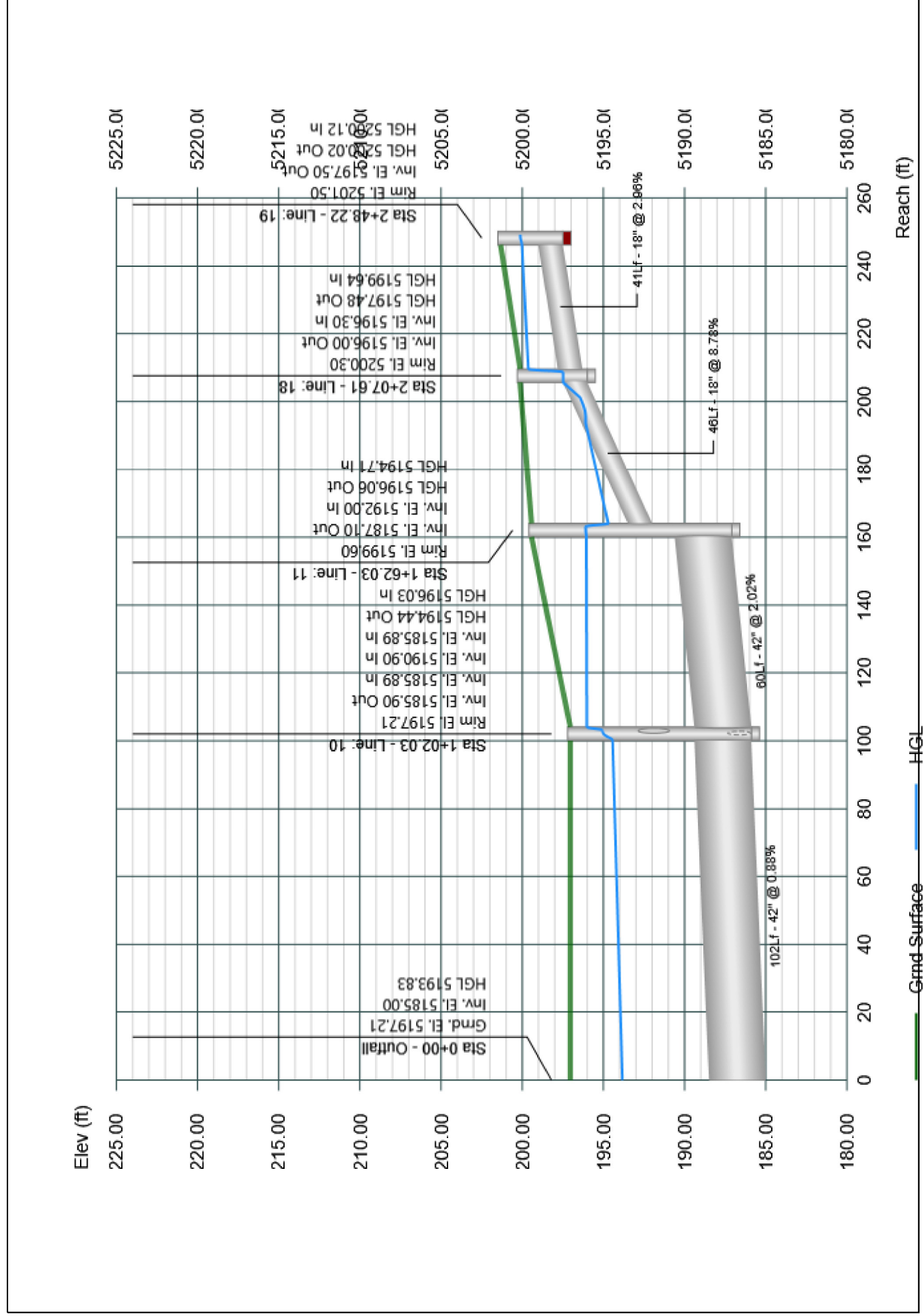


Profile View

Stormwater Studio 2018 v 1.0.0.0

Project Name: Enter Project Name...

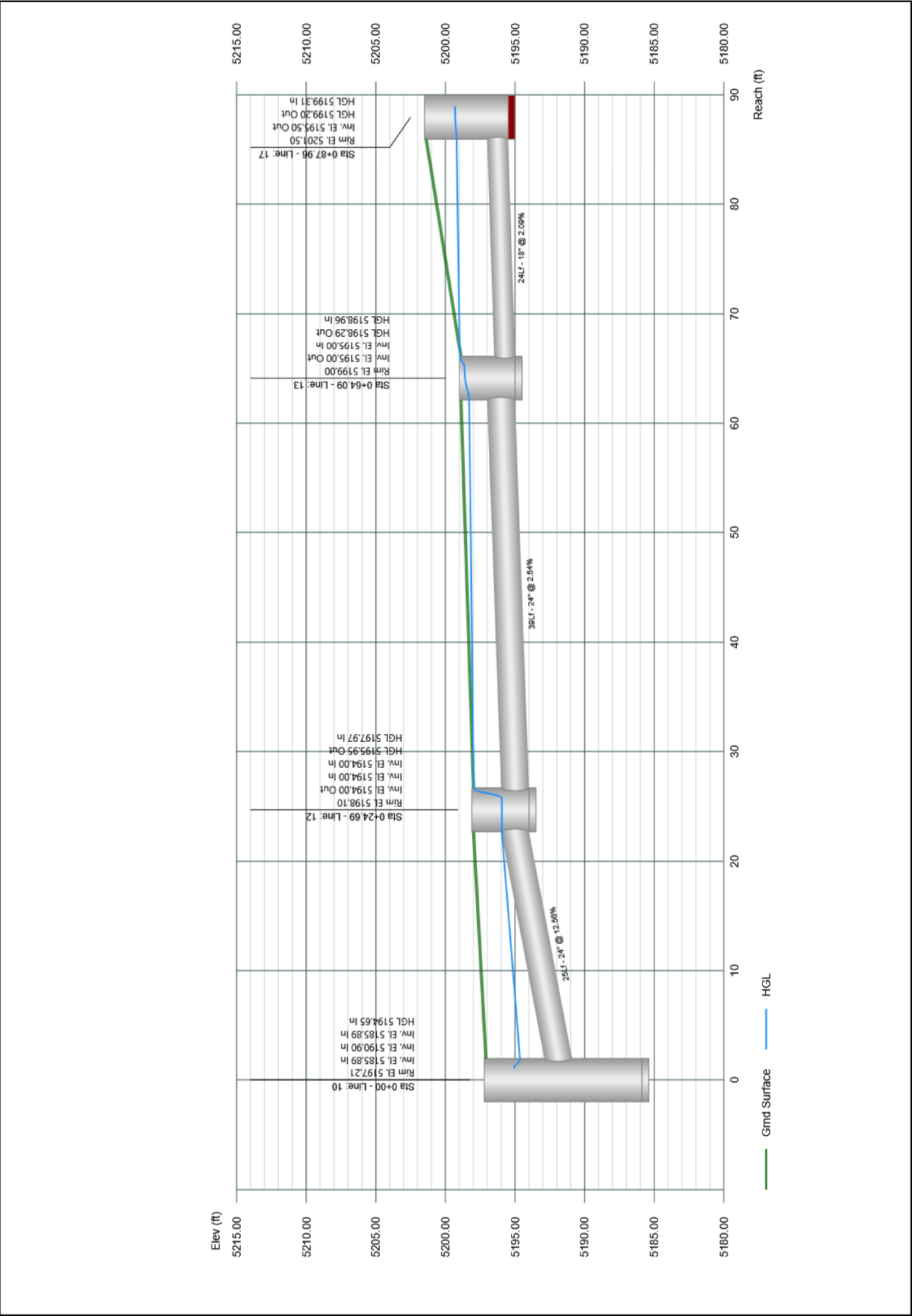
07-30-2019



Profile View

Stormwater Studio 2018 v 1.0.0.0

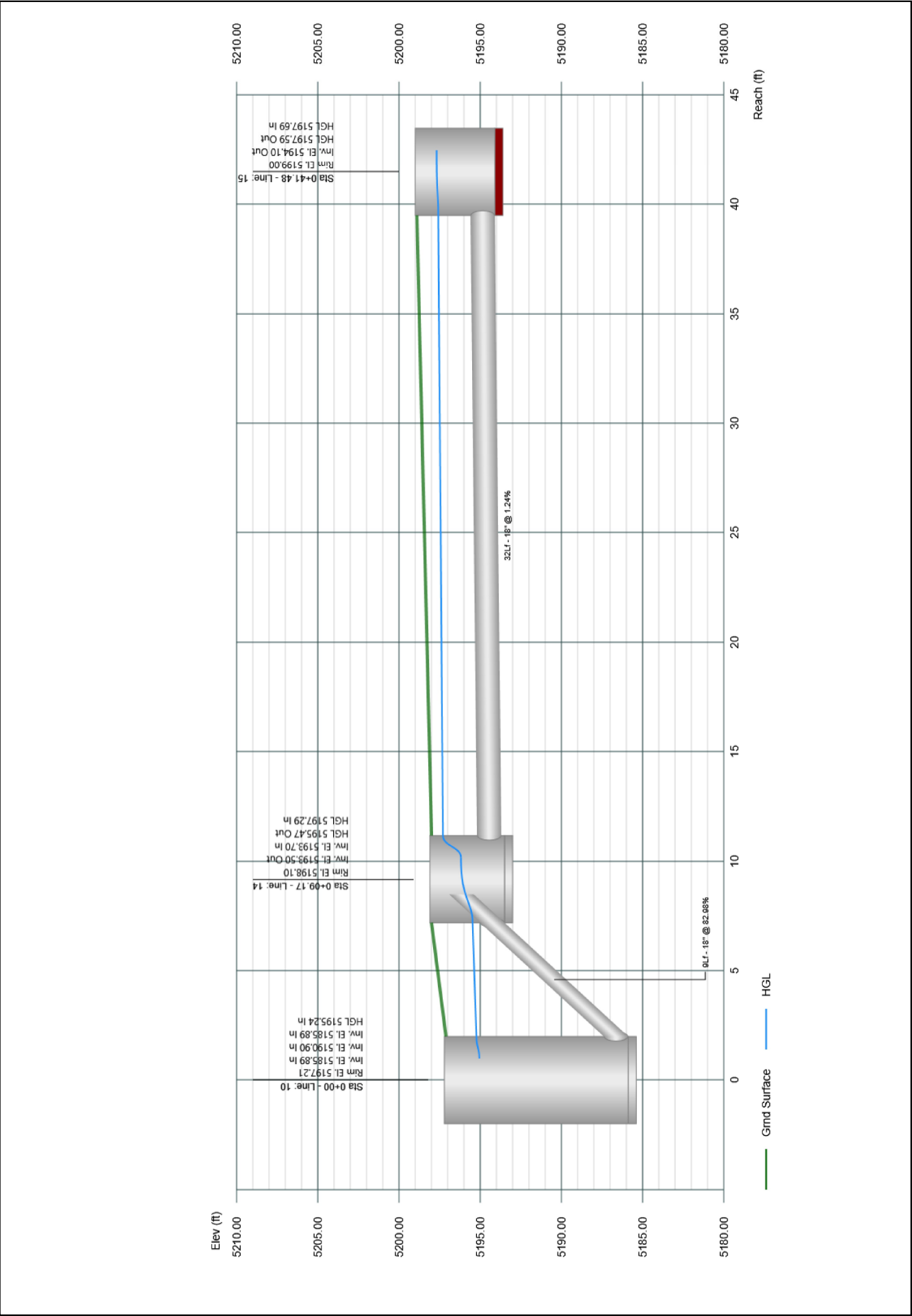
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07-30-2019



Profile View

Stormwater Studio 2018 v 1.0.0.0

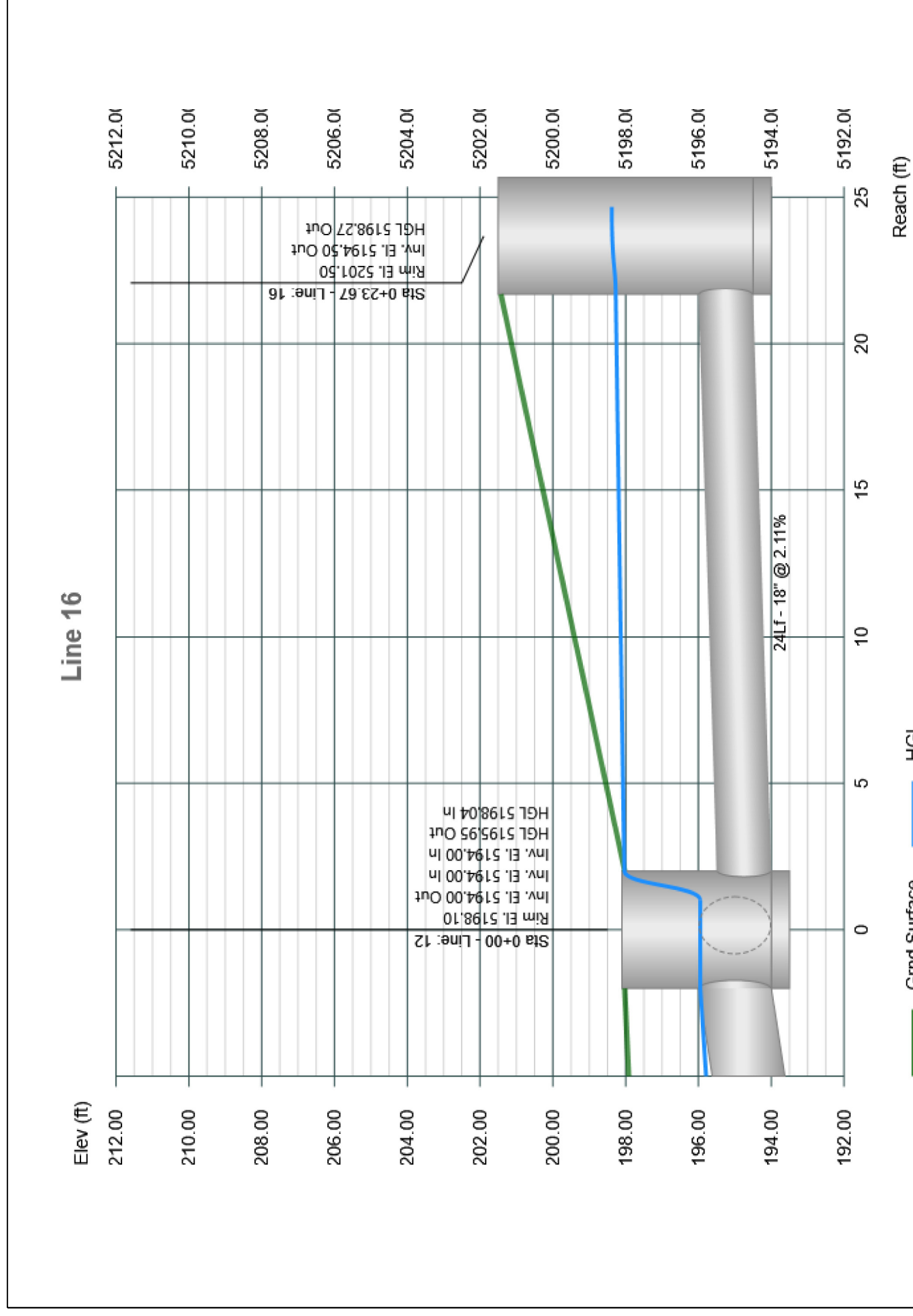
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07-30-2019



Project Name: Enter Project Name...

Stormwater Studio 2018 v 1.0.0.0

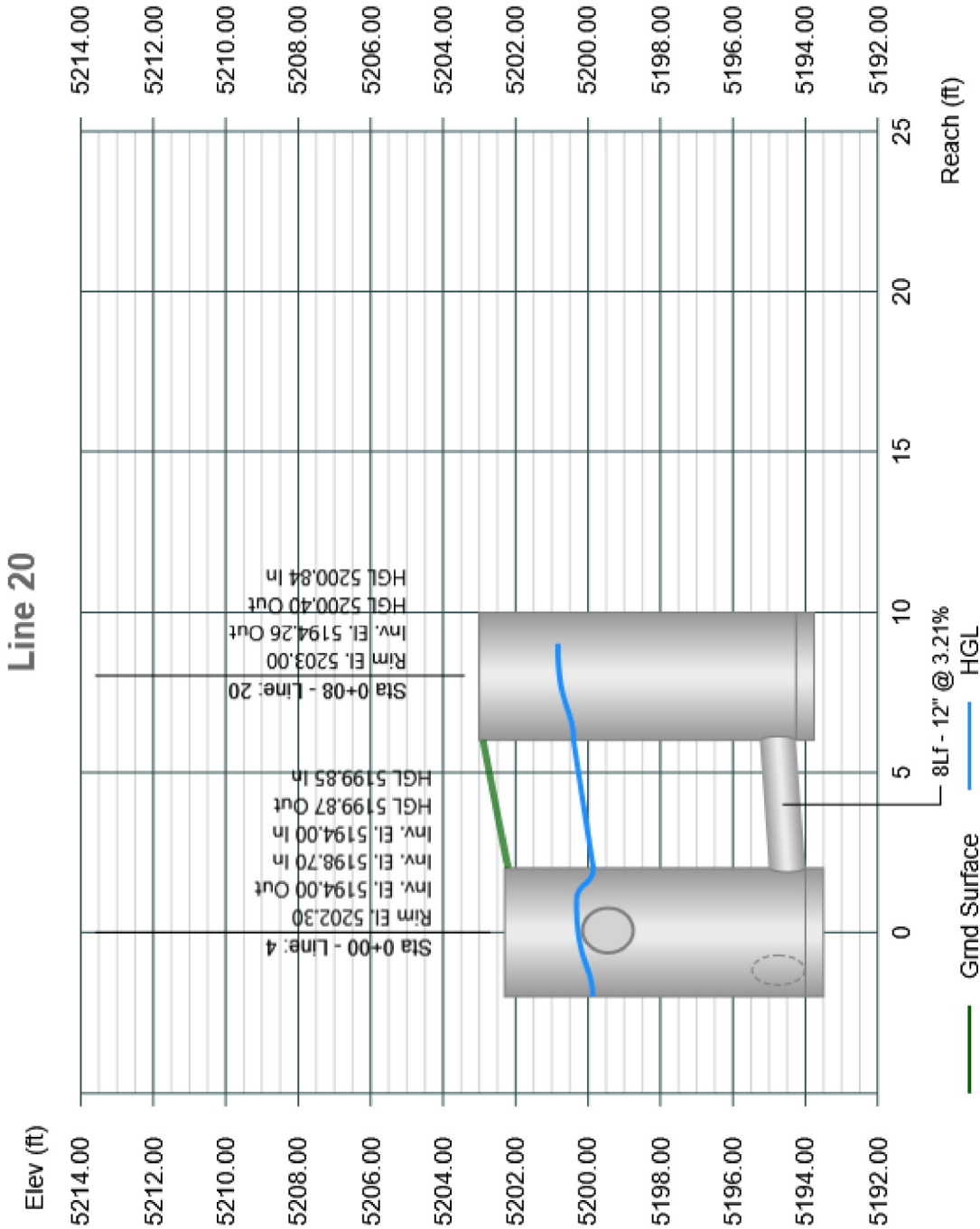
07-30-2019



Profile View

Stormwater Studio 2018 v 1.0.0.0

Project Name: Enter Project Name...
07-30-2019



Weir Report

16-FOOT WEIR

Rectangular Weir

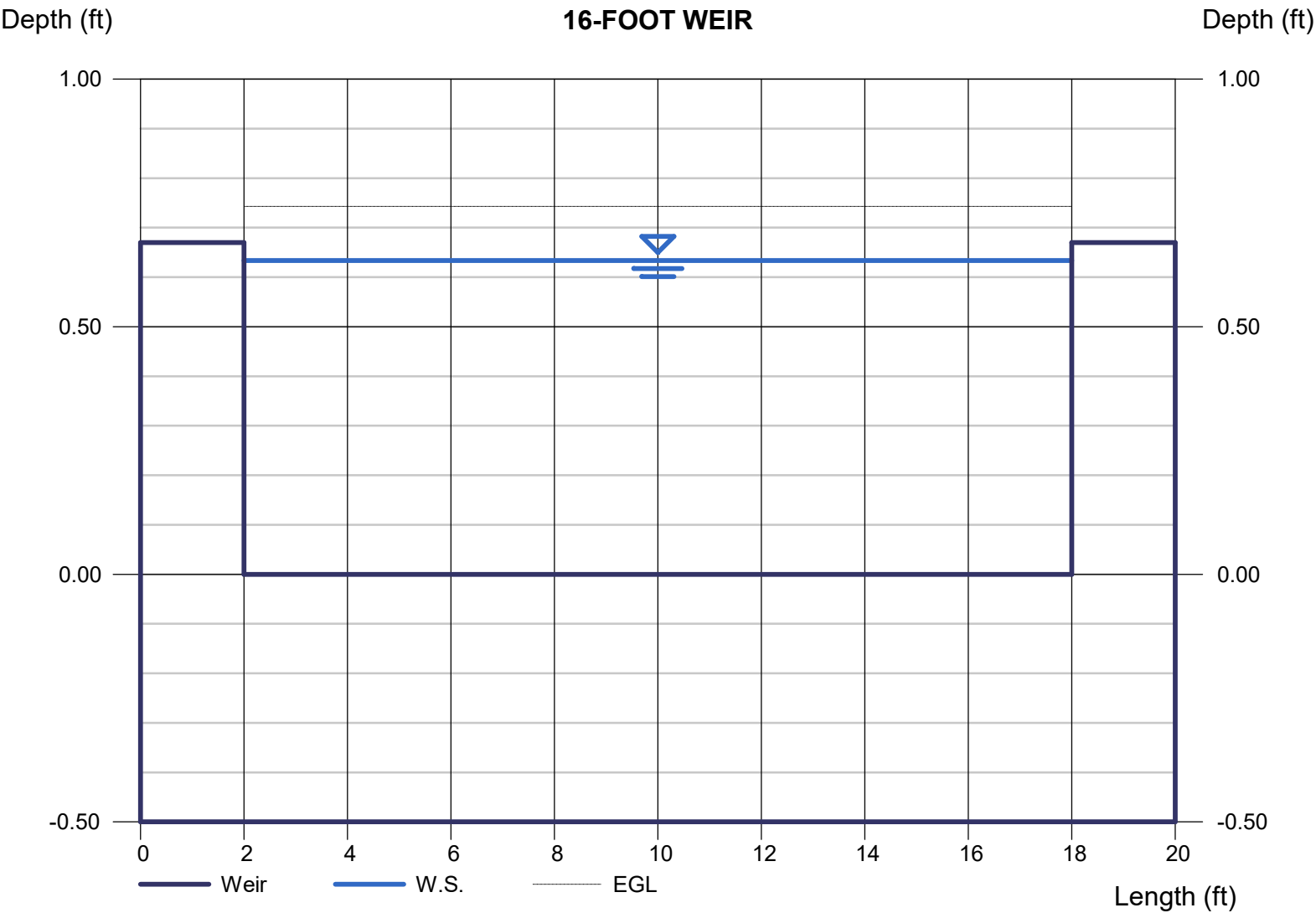
Crest = Sharp
Bottom Length (ft) = 16.00
Total Depth (ft) = 0.67

Calculations

Weir Coeff. Cw = 3.33
Compute by: Known Q
Known Q (cfs) = 26.90

Highlighted

Depth (ft) = 0.63
Q (cfs) = 26.90
Area (sqft) = 10.14
Velocity (ft/s) = 2.65
Top Width (ft) = 16.00



EXCERPTS FROM SAD 222
DRAINAGE ANALYSIS REPORT

SAD 222 STORM DRAIN AS-BUILTS



CITY OF ALBUQUERQUE
NEW MEXICO
PUBLIC WORKS DEPARTMENT

SPECIAL ASSESSMENT DISTRICT 222
DRAINAGE ANALYSIS

May 19, 2000
(Revised September 12, 2000)



Prepared by:



8500 MENAUL BLVD NE, SUITE A-440
ALBUQUERQUE, NEW MEXICO 87112

Undeveloped flow/volume/acre
Calculations

Existing Conditions

$$\frac{114 \text{ cfs}}{57.1 \text{ ac}} = 2 \text{ cfs/ac} \text{ @ } 1 \text{ mm}$$

$$\frac{57.1 \text{ ac-ft}}{57.1 \text{ ac}} = 1.0 \text{ ac-ft/ac} \text{ @ } 1 \text{ mm}$$

TABLE 1

AHYMO BASIN PARAMETER WORKSHEET
PEAK BASIN FLOWS AND VOLUMES

EXISTING CONDITIONS

(ALL FLOWS & VOLUMES INCLUDE A 5% BULKING FACTOR)

BASIN		AREA		LENGTH (ft)	DIFF (ft)	SLOPE (%)	K	VEL (fps)	T(c) (hr)	T(p) (hr)	LAND TREATMENT (%)				10 YEAR		100 YEAR	
		(ac)	(sq mi)								A	B	C	D	PEAK FLOW (6 hr) (cfs)	RUNOFF VOLUME (24 hr) (ac ft)	PEAK FLOW (6 hr) (cfs)	RUNOFF VOLUME (24 hr) (ac ft)
A1-E	57.1	0.0892	400 500 800 1100 TOTAL =	8.0 3.0 18.0 31.0	2.00 0.60 2.25 2.82	1.0 2.0 2.0 3.0	1.41 1.55 3.00 5.04	0.08 0.09 0.07 0.06 0.30	0.05 0.06 0.05 0.04 0.20	42	5	31	22	54	2.5	114	5.1	
A2-E	34.7	0.0542	400 1500 900 TOTAL =	8.0 42.0 6.0	2.00 2.80 0.67	0.7 2.0 3.0	0.99 3.35 2.45	0.11 0.12 0.10 0.34	0.07 0.08 0.07 0.23	88	0	5	7	12	38	0.6	1.8	
A3-E	26.8	0.0419	300 850 350 TOTAL =	4.0 16.0 5.0	1.33 1.88 1.43	0.7 3.0 3.0	0.81 4.12 3.59	0.10 0.06 0.03 0.19	0.07 0.04 0.02 0.13	72	5	7	16	22	56	0.8	1.9	
A4-E	28.1	0.0439	400 300 500 550 TOTAL =	10.0 7.0 8.0 4.0	2.50 2.33 1.60 0.73	0.7 2.0 2.0 3.0	1.11 3.06 2.53 2.56	0.10 0.03 0.05 0.06 0.24	0.07 0.02 0.04 0.04 0.16	53	16	3	28	29	62	1.3	2.5	
A5-E	28.9	0.0452	400 600 950 TOTAL =	9.0 14.0 10.0	2.25 2.33 1.05	0.7 2.0 3.0	1.05 3.06 3.08	0.11 0.05 0.09 0.25	0.07 0.04 0.06 0.16	87	0	2	11	15	45	0.6	1.7	

TABLE 4

**AHYMO BASIN PARAMETER WORKSHEET
PEAK BASIN FLOWS AND VOLUMES**

DEVELOPED CONDITIONS

(ALL FLOWS & VOLUMES INCLUDE A 2% BULKING FACTOR)

BASIN	AREA		LENGTH (ft)	DIFF (ft)	SLOPE (%)	K	VEL (fps)	T(c) (hr)	T(p) (hr)	LAND TREATMENT (%)				10 YEAR		100 YEAR	
	(ac)	(sq mi)								A	B	C	D	PEAK FLOW (6 hr) (cfs)	RUNOFF VOLUME (24 hr) (ac ft)	PEAK FLOW (6 hr) (cfs)	RUNOFF VOLUME (24 hr) (ac ft)
A1-D	29.3	0.0458	400	8.0	2.00	1.0	1.41	0.08	0.05								
			500	3.0	0.60	2.0	1.55	0.09	0.06								
			900	25.0	2.78	3.0	5.00	0.05	0.03								
		TOTAL =						0.22	0.15	0	24	0	76	67	2.9	109	4.9
A2-D	25.3	0.0395	200	6.0	3.00	0.7	1.21	0.05	0.03								
			850	23.0	2.71	3.0	4.93	0.05	0.03								
		TOTAL =	1000	6.0	0.60	3.0	2.32	0.12	0.08								
								0.21	0.14	0	30	0	70	56	2.4	93	4.0
A3-D	26.8	0.0419	200	4.0	2.00	0.7	0.99	0.06	0.04								
			900	9.0	1.00	3.0	3.00	0.08	0.06								
		TOTAL =	750	18.0	2.40	3.0	4.65	0.04	0.03								
								0.18	0.12	0	35	0	65	59	2.4	100	4.0
A4-D	26.6	0.04156	200	6.0	3.00	0.7	1.21	0.05	0.03								
			800	16.0	2.00	3.0	4.24	0.05	0.03								
		TOTAL =	1000	6.0	0.60	3.0	2.32	0.12	0.08								
								0.22	0.15	0	32	10	58	50	2.1	86	3.7
A4.1-D	3.2	0.00503	1050	26.0	2.48	3.0	4.72	0.06	0.04								
		TOTAL =						0.06	0.04	0	30	5	65	7	0.3	12	0.5
A5-D	26.2	0.0409	200	4.0	2.00	0.7	0.99	0.06	0.04								
			950	8.0	0.84	3.0	2.75	0.10	0.06								
		TOTAL =	900	18.0	2.00	3.0	4.24	0.06	0.04								
								0.21	0.14	0	40	0	60	53	2.2	90	3.8

TABLE 5**SUMMARY OF PEAK DISCHARGES
AND PEAK VOLUMES****DEVELOPED CONDITIONS****(ALL FLOWS INCLUDE A 2% BULKING FACTOR)**

ANALYSIS POINT	Q (10) 6 hr (cfs)	V (10) 24 hr (ac ft)	Q (100) 6 hr (cfs)	V (100) 24 hr (ac ft)
1	67	3.0	109	4.9
2	120	5.3	197	8.8
3	173	7.7	287	12.9
4	276	12.8	470	21.8
5	325	15.0	551	25.6
6	63	3.0	111	5.3
7	22	0.9	40	1.5
8	49	2.1	89	3.7
9	441	20.2	759	34.7
10	-	-	-	-
11	34	1.4	57	2.3
12	75	3.3	130	5.5
13	116	5.3	210	9.1
14	314	13.9	551	24.1
15	44	1.8	75	3.0
16	62	2.6	107	4.4
17	127	5.2	223	9.1
18	179	7.5	312	13.1
19	332	14.8	585	25.6
20	789	35.5	1392	61.8
21	24	32.2	28	39.4
22	32	3.0	51	5.0
23	38	3.2	59	5.4
24	43	3.5	67	5.8

TABLE 6

BASIN RUNOFF TO ADJACENT STREETS

BASIN	10-YR PEAK	100-YR PEAK	STREET LENGTH	STREET WIDTH	STREET LAND TREAT % C	STREET LAND TREAT % D	STREET AREA	10-YR STREET FLOW	10-YR SURF RUNOFF TO	10-YR SD RUNOFF TO	100-YR STREET FLOW	100-YR SURF RUNOFF TO	100-YR SD RUNOFF TO
A1-D	66.8	108.7	985 985 1100	130 130 60	41.4 24.0 24.4	58.6 76.0 75.6	128050 128050 66000	6.79 3.86	5.61	50.53	11.79 6.07	9.08	81.76
							TOTAL SD FLOW FROM SUNSET G. ONTO 98TH =						87.83
A2-D	56.2	93.2	1100 1100 1000	130 130 60	41.4 24.0 24.4	58.6 76.0 75.6	143000 143000 60000	7.58 3.51	4.51	40.59	13.16 5.52	7.45	67.07
							TOTAL SD FLOW FROM EUCARIZ ONTO 98TH =						72.58
A3-D	59.3	99.9	1175 1175 965	130 130 VARIES	41.4 24.0 12.8	58.6 76.0 87.2	152750 152750 68790	8.10 4.28	4.69	39.88	14.06 6.60	7.92 3.96	67.35
							TOTAL SD FLOW FROM TOWER ONTO 98TH =						77.91
A4-D	50.4	86.3	1200 1070	100 60	27.3 24.4	72.7 75.6	120000 64200	6.91 3.76	3.97	35.76	10.91 5.90		69.49
							AREA A4-D SD FLOW FROM 94TH ONTO TOWER =						75.39
							TOTAL SD FLOW FROM 94TH ONTO TOWER =						185.29
A5-D	52.5	90.2	1075 1070	100 60	27.3 24.4	72.7 75.6	107500 64200	6.19 3.76	4.26	38.30	9.77 5.90	7.45	67.07
							TOTAL SD FLOW FROM 90TH ONTO TOWER =						72.97
A6-D	51.8	92.6	1100 1070	100 60	27.3 4.2	72.7 95.8	110000 64200	6.33 4.17	4.13 2.06	35.10	10.00 6.35	7.63 3.81	64.81
							AREA A6-D SD FLOW FROM 86TH ONTO TOWER						74.97
							TOTAL SD FLOW FROM 86TH (N) ONTO TOWER						160.34
A7-D	23.6	42.2	1100 400	100 60	27.3 4.2	72.7 95.8	110000 24000	0.00 1.56	0.00 2.20	19.84	0.00 2.37	0.00 3.98	0.00 35.84
							TOTAL SD FLOW FROM 86TH (S) ONTO TOWER						42.20
A10-D	32.0	57.3	600 1100	60 60	4.2 24.4	95.8 75.6	36000 66000	2.34 3.86	2.97 2.81	20.02	3.56 6.07	4.77 4.77	38.14
							TOTAL SD FLOW FROM 86TH ONTO EUCARIZ						46.47
							TOTAL SD FLOW FROM EUCARIZ ONTO 86TH						54.79
B4-D	27.7	49.5	1025 665	60 60	24.4 4.2	75.6 95.8	61500 39900	3.60 2.59	2.15 2.15	17.21	5.65 3.95	3.99 3.99	31.92
							TOTAL SD FLOW FROM 86TH (N) ONTO SAN YGN						39.86

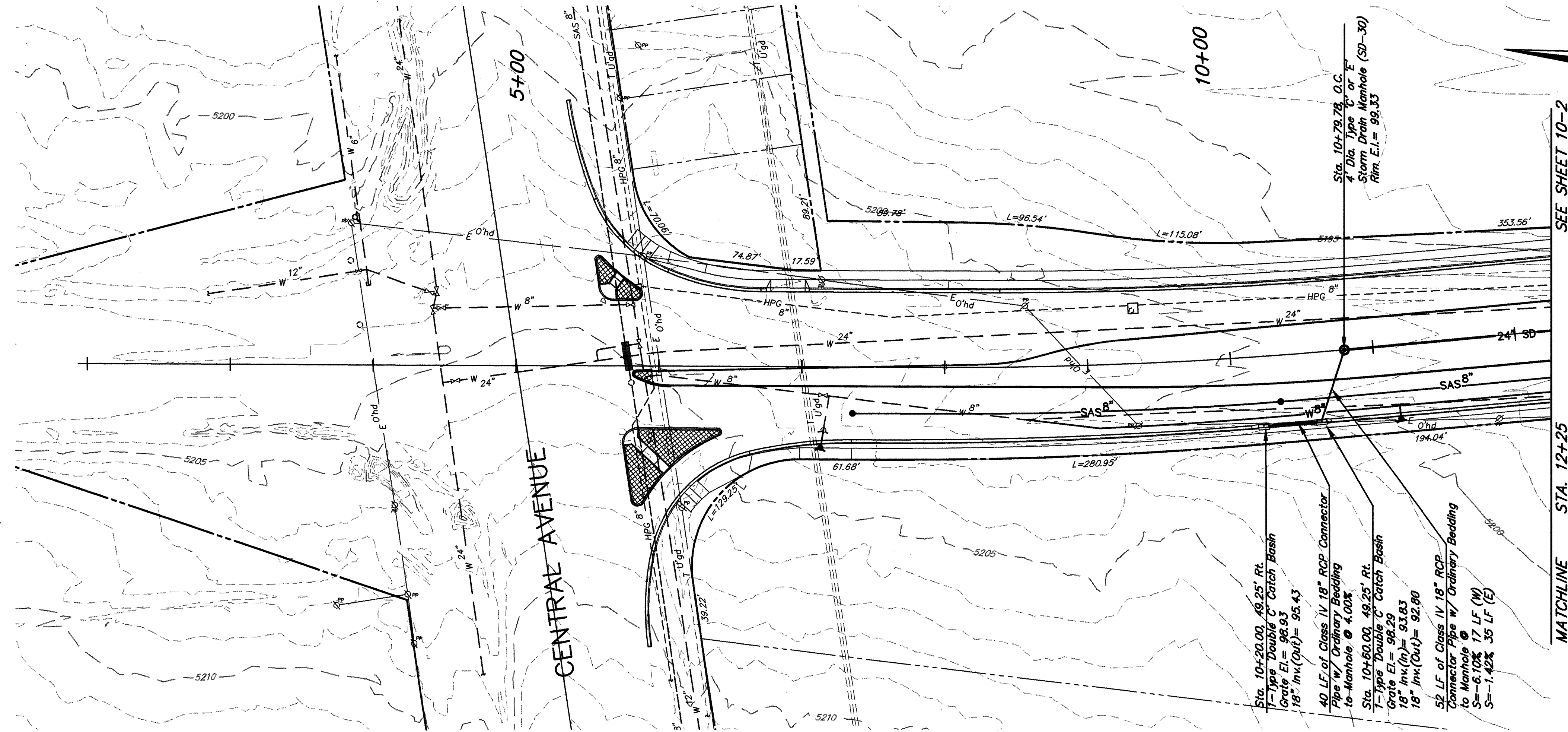
Developed
flow/acre calcs:

Flows not
including street
flows
52.108.7
+ 2.1
= 54.211.8
10890.8 cfs

Total onsite
area
22.1 ac.

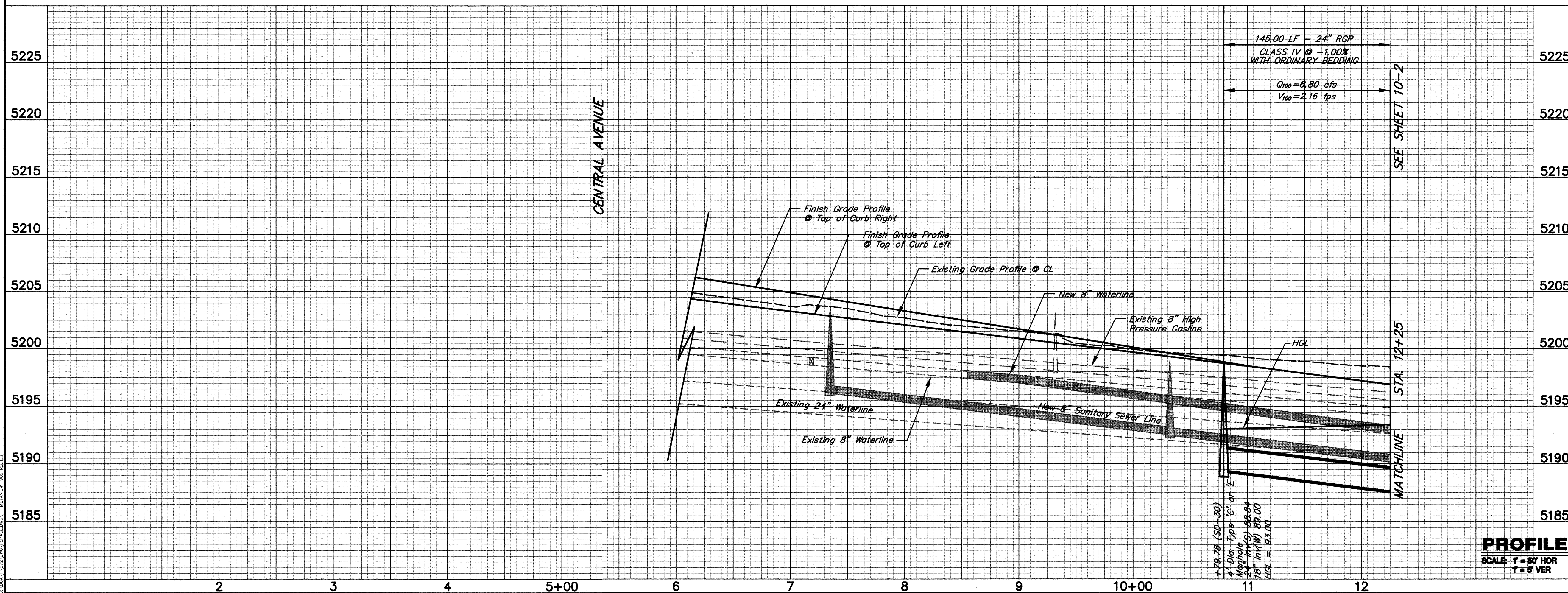
Discharge =
90.8/22.1
= 4.1 cfs/ac

SCANNED BY
MESA REPRO

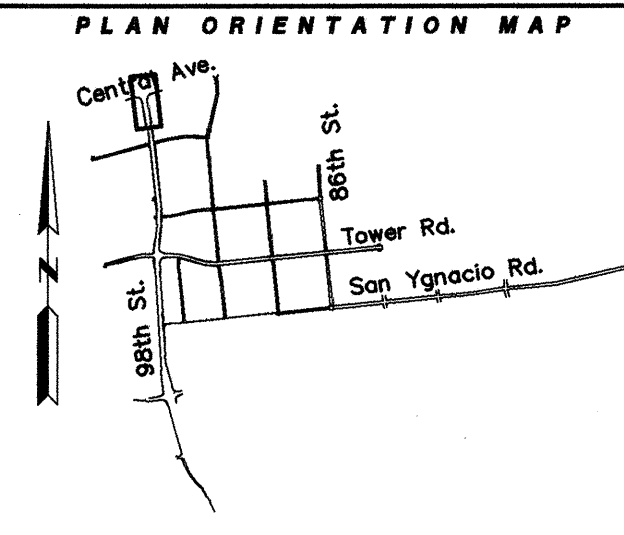


PLAN
SCALE 1" = 60'

98TH STREET SW.



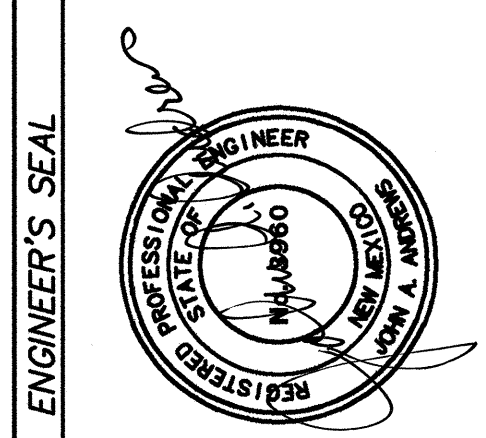
PROFILE
SCALE 1" = 60' HOR
1" = 5' VER



AS BUILT INFORMATION	
CONTRACTOR	
WORKED BY	
INSPECTED BY	
ACCEPTANCE BY	
VERIFICATION BY	
DESIGNED BY	
DRAWN BY	
CHECKED BY	
RECORDED BY	
DATE	

BENCH MARKS	
10-19 LOCATED AT THE INTERSECTION OF 1-40 AND 98TH ST. IN THE NE QUADRANT OF THE INTERSECTION.	
AN ACS 1 1/4" ALUMINUM CAP STAMPED "10-19, 1989" SET FLUSH IN THE TOP OF THE SSE CURB RETURN.	
X=352794.84 Y=1482084.51 ELEV. 5204.437	

SURVEY INFORMATION	
FIELD NOTES	
NO.	DATE
1	
2	
3	
4	
5	
6	
7	



REVISIONS	
NO.	DATE
1	
2	
3	
4	

RECORD DRAWING

THE LARKIN GROUP
8500 MENAUL NE, SUITE A440
ALBUQUERQUE, NEW MEXICO 87112
TELEPHONE (505) 275-7500
FAX (505) 275-0748

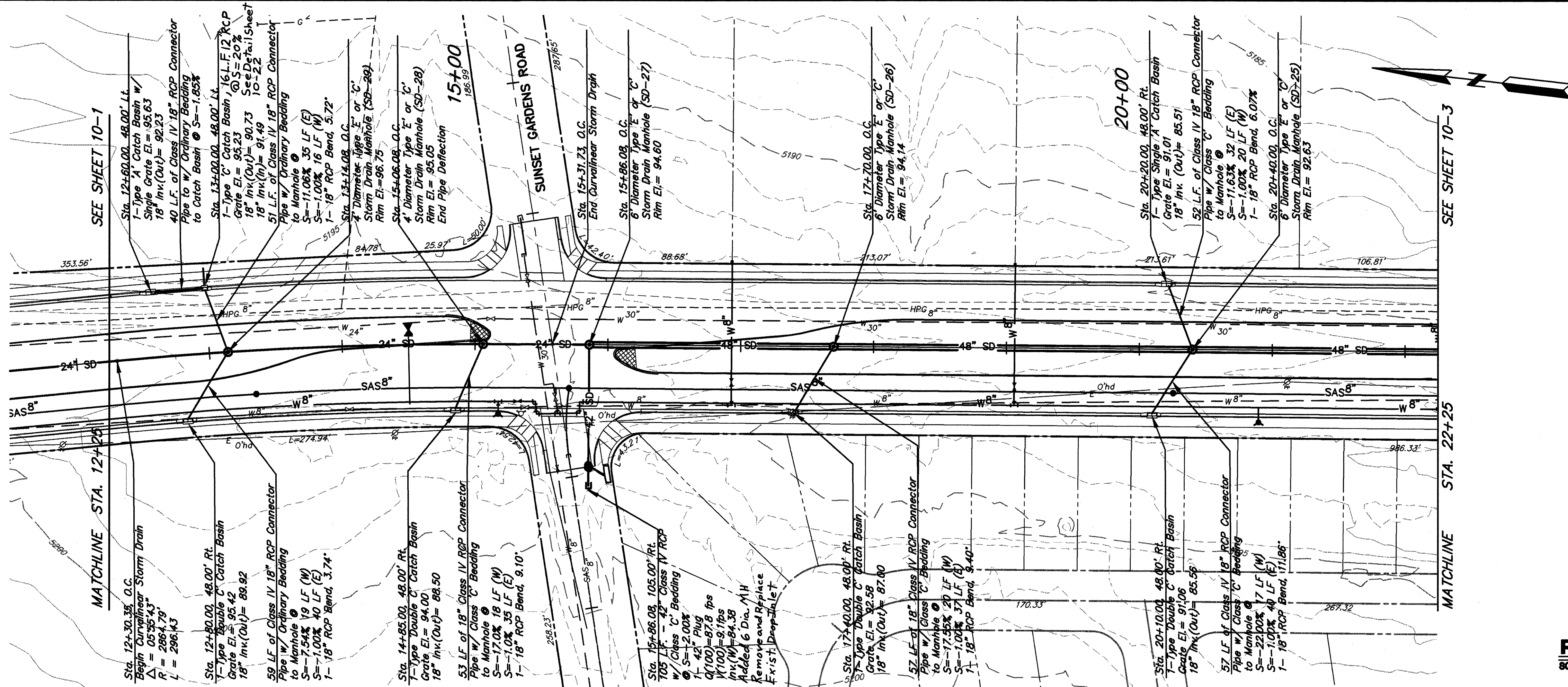
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP

TITLE: SPECIAL ASSESSMENT DISTRICT 222
98TH STREET SW.
STORM DRAIN PLAN & PROFILE

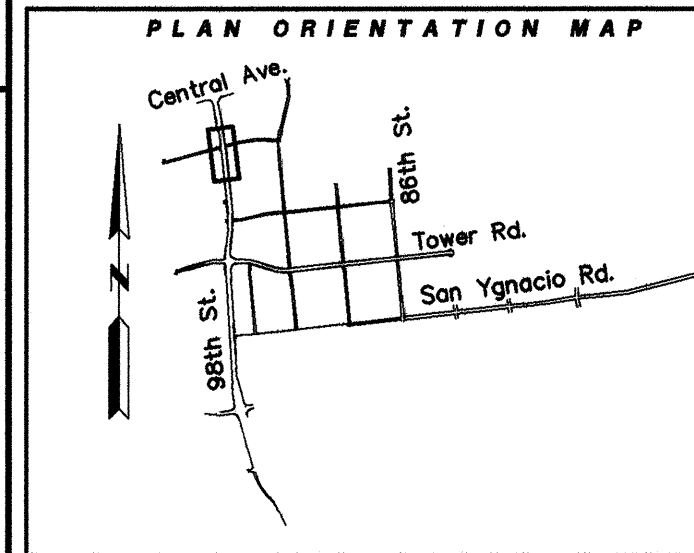
Design Review Committee	City Engineer Approval
DEC 12 2000	DEC 12 2000
REVIEWED BY	CITY ENGINEER

City Project No. 4188.91 Zone Map No. L & M-9 Sheet 10-1 of 10-23

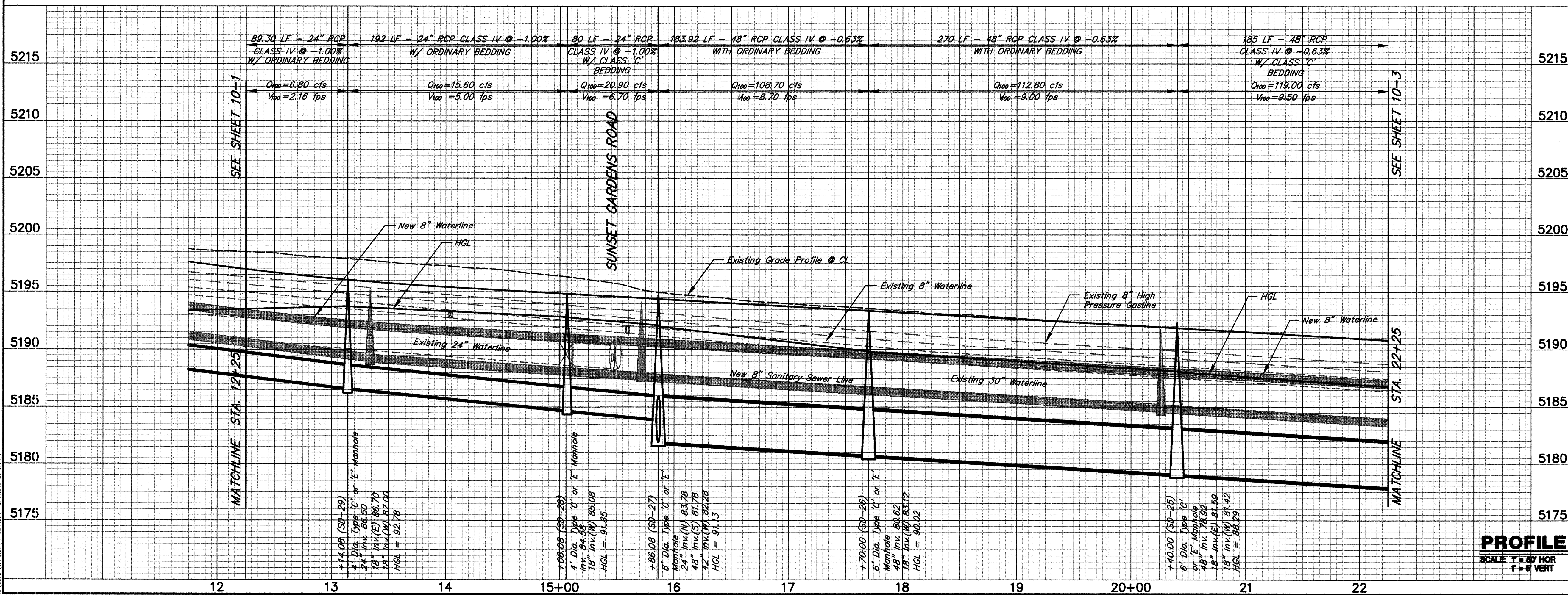
SCANNED BY
MESA REPRO



PLAN
SCALE 1" = 60'



98TH STREET SW.



PROFILE
SCALE 1" = 60' HOR
1" = 6' VERT

RECORD DRAWING

THE LARKIN GROUP, INC.
8500 MENAUL NE, SUITE A440
ALBUQUERQUE, NEW MEXICO 87112
TELEPHONE (505) 275-7500
FAX (505) 275-0748

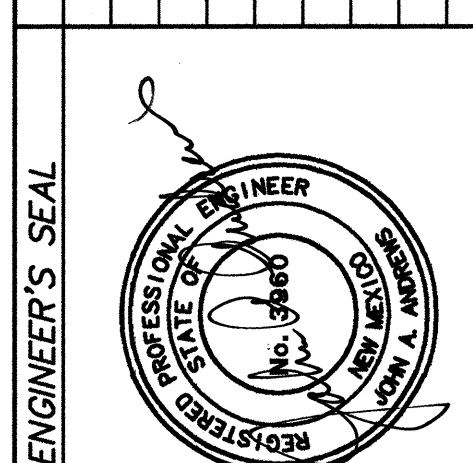
CITY OF ALBUQUERQUE
PUBLIC WORKS DEPARTMENT
ENGINEERING GROUP
TITLE: SPECIAL ASSESSMENT DISTRICT 222
98TH STREET SW.
STORM DRAIN PLAN & PROFILE

Design Review Committee		City Engineer Approval		No./Day/Yr.	
DEC 1 2 2000	DEC 1 2 2000				
City Project No. 4188.91		Zone Map No. L & M-9		Sheet 10-2 of 10-23	

AS BUILT INFORMATION	
CONTRACTOR	
WORK BY	
INSPECTOR'S	
ACCEPTANCE BY	
DATE	
DATE	
DATE	
DATE	

BENCH MARKS	
10-L9 LOCATED AT THE INTERSECTION OF	
1-40 AND 98TH ST. IN THE NE QUADRANT	
OF THE INTERSECTION.	
AN ACS 1 3/4" ALUMINUM CAP STAMPED	
"10-L9, 1989" SET FLUSH IN THE TOP OF	
THE SSE CURB RETURN.	
X=352794.84 Y=1482084.51	
ELEV. 5204.437	

SURVEY INFORMATION	
FIELD NOTES	
NO.	DATE
1	
2	
3	
4	
5	
6	
7	



ENGINEER'S SEAL	
4	
3	
2	
1	
NO.	DATE
DESIGNED BY: S.M.B.	DATE: DEC. 2000
DRAWN BY: R.J.S.	DATE: DEC. 2000
CHECKED BY: J.A.A.	DATE: DEC. 2000