



Planning Commission
SPECIAL MEETING AGENDA OF SEPTEMBER 27, 2022
CITY HALL COUNCIL CHAMBERS
7:00 PM

CALL TO ORDER

ROLL CALL

APPROVAL OF MINUTES

1. Regular meeting/work session of August 9, 2022

CORRESPONDENCE

1. Proposed Charter Amendments

OLD BUSINESS

1. Review of Proposed Planning Commission Bylaw changes
2. Discussion of other zoning update implementation tasks

NEW BUSINESS

1. **Culver's Restaurant, 32574 Lorain Rd, North Ridgeville, OH 44039, PPN 07-00-003-101-010 & 07-00-004-109-043**

Applicant: Joshua Clark, 216 Dirt Holdings, LLC, P.O. Box 591, Rhinelander, WI 54501. Proposal consists of a lot split to create a 1.7431-acre lot and development plans for a 4,393 sq. ft. single story Culver's Restaurant with 58 parking spaces. Property is zoned B-4.

2. **Proposed Zoning Amendment**

An Ordinance amending Sections 1266.04 and 1268.04 of the North Ridgeville Zoning Code to update lot and yard requirements.

ADJOURNMENT

Meetings are broadcast on the North Ridgeville YouTube channel at:
www.youtube.com/channel/UCThTaGFRof_AOvxSYzMNYg

Visit the Planning Commission webpage to access agenda items:
<http://www.nridgeville.org/PlanningCommission.aspx>

**NORTH RIDGEVILLE PLANNING COMMISSION
MINUTES OF REGULAR MEETING
TUESDAY, AUGUST 9, 2022**

CALL TO ORDER:

Chairman Smolik called the Planning Commission meeting to order with the Pledge of Allegiance at 7:00 PM.

ROLL CALL:

Present were members Steve Ali, Paul Graupmann, Vice-Chairwoman Jennifer Swallow, Council Liaison Bruce Abens and Chairman James Smolik. Also present were Planning and Economic Development Director Kimberly Lieber, Assistant Law Director Toni Morgan, City Engineer Daniel Rodriguez and Deputy Clerk of Council Tina Wieber.

MINUTES:

Chairman Smolik asked if the members had a chance to review the minutes of the regular meeting on July 12, 2022. He asked if there were any corrections. Hearing no corrections, the minutes were approved.

NEW BUSINESS:

Scooter's Coffee, Vacant lot on Center Ridge next to Blue Falls Car Wash, North Ridgeville, OH 44039, PPN 07-00-016-101-026

Applicant: Ryan Mann, Shops on Center Ridge, LLC, 5050 Detroit Rd, Sheffield Village, OH 44035. Proposal consists of a retail drive through coffee establishment and would include preparation of remaining property for future development. Property is zoned B-3/RS-1.

Application and Administrative comments were read.

Chairman Smolik asked the applicant to state his name and address for the record.

Ryan Mann, Shops on Center Ridge, LLC, 5050 Detroit Rd, Sheffield Village, OH 44035.

Brent Anderson, Rafter A, Ltd., 42635 Oberlin Elyria Rd, Oberlin OH 44074.

Chairman Smolik asked the applicant to discuss the application.

Mr. Mann explained that they were proposing a retail development located just directly east of 34564 Center Ridge Road, Blue Falls Car Wash. He stated that there were 2.4 acres of land at the location and an acre of which was delegated for storm water management system, the existing pond in the back. He discussed that they were there to discuss the 1.4 acres on Center Ridge. He mentioned that there was an overall development plan that they were going to present and they were looking at the project in two phases with two different buildings going up. He explained that the first phase was Scooter's Coffee, a drive-through coffee concept. He stated that Scooter's

Coffee had been around since 1998 for twenty-some years and had 500 locations throughout twenty states throughout the country. He added that they were an established brand but newer to northeast Ohio. He mentioned that they were headquartered in Omaha, Nebraska. He stated that they were a well established brand and they chose North Ridgeville to plant their flag as their first location. He said that the actual structure would be 664 square feet with no dining so it would just be a drive-through concept. He described that on any given shift there would be six to eight employees. He stated that it would be a wood frame construction on a concrete slab and particle board siding. He mentioned that Brent Anderson was their engineer and Mike Shimandle, who would be the Scooter's franchisee and operator were in attendance also.

Chairman Smolik asked if any of the Commission members had any questions or comments.

Member Graupman asked if there would be any inside service at all and if it was strictly drive-through.

Mr. Mann stated that was correct. He explained that that was their concept since 1998 but that with Covid and the need of convenience for Americans with the drive-through and the quick grab and go in the morning has increased their growth the past couple years.

Vice-Chairwoman Swallow asked how many stacking spaces there would be in the drive-through service area.

Mr. Anderson explained that they had approximately nine stacking spaces there. He mentioned that the way the site was laid out, it would keep people off of Center Ridge Road and the general layout of having the drive-through around back. He stated that they had all that room on the side of it for additional parking.

Vice-Chairwoman asked what the hours of operation were.

Mike Shimandle 4408 Yorktown Court, Lorain OH 44053.

Mr. Shimandle stated that they would be open from 5:30 in the morning until approximately 8 o'clock at night, Monday through Sunday.

Vice-Chairwoman Swallow asked where the speakers in the drive-through would be located.

Mr. Anderson discussed that when entering the drive you would go around the building to the back and pointed to where the ordering signs would be as well as where the pick-up window would be located. He stated that one of the comments from the pre-hearing was to provide a landscape plan and that they had submitted an updated landscape plan where it showed more trees on the back mound. He pointed to the back of the location and mentioned that there was a mound with some trees on it and there was a privacy fence that went behind the site and had a few additional landscaping units behind the restaurant area.

Vice-Chairwoman asked if it would be only coffee or if food items would be sold.

Mr. Shimandle stated that there would be food items that would be served.

Vice-Chairwoman asked if he knew what his average turnaround time was for customers.

Mr. Shimandle explained that that was one of the things that Scooter's prided themselves on. He stated that it was approximately two minutes from the time of order placement until the time that it was picked up.

Chairman Smolik remarked that there was a large retaining wall along the side property and it had a fall of five to nine feet. He asked if there would be a fence along that.

Mr. Anderson stated that currently the retaining wall was actually raised above the parking by approximately two feet or so. He added that they didn't have any fence that was proposed at that time.

Chairman Smolik asked Chief Building Official Fursdon if two feet was considered a barrier on site and what would be a hazard for a pedestrian to fall over that retaining pond.

Chief Building Official Fursdon stated that the building code only talked about the building inside and fall zones. He explained that if he was talking about grading outside the building that that was a question for the City Engineer.

City Engineer Rodriguez explained that there wasn't anything in the City's code or ordinances regarding grading around ponds.

Chairman Smolik stated that it appeared that was mostly the circulation drive and the likelihood of someone walking in that area would be pretty low.

Mr. Anderson remarked that it was pretty low. He explained that that was where they would have the traffic going around and one of the reasons they brought the area up a little was to avoid a car going over the edge.

Chairman Smolik asked about the adjacent phase that would be done at a later date and if the utilities would be stubbed in with the current phase so that they wouldn't have to go through that circulation drive.

Mr. Anderson discussed that some of the things that would happen with that would be that with the overall development plan, the storm water would be collected in the back and taken up and a lateral put in for that to connect to the building in the future. He explained that it was the same with the sanitary and that it would be in the back rear part of the property and would have a lateral installed at the same time for the future. He stated that they would most likely put in a few chase conduits for things like the water line that would come from Center Ridge Road and some of the electrical and utilities. He said that they weren't exactly sure of the size of some of the items but they would be taken into account for as it was being built.

Chairman Smolik asked if the size of the retention basin in the back was for the whole development plan.

Mr. Anderson remarked that it was and that back when the original site was the AutoZone, far to the west, that it was sized for everything on site and some of the main runs that handle the water and get to that pond had been there.

Chairman Smolik stated that the retaining wall in the back of the building could be seen from the residential district and asked if was going to be normal plain concrete or if would be have some texture like maybe stone.

Mr. Anderson discussed that the plans had a concrete retaining wall to get information on pricing but there was an option to go with a stone strong wall where it would be large retaining wall blocks that were built up with the rock face. He explained that in speaking with the City Engineer, he asked if there was an opportunity to connect the wall with what Blue Falls currently had in with their wall. He said that they reached out to them and the owners stated that they were open to that idea. He remarked that they may be able to make it look a little more seamless along the back if that connection could actually be made. He stated that they were leaning more toward the stone strong wall system.

Chairman Smolik replied that they were looking at the aesthetics.

Mr. Anderson responded that was correct and also putting the vinyl fence on top and trying to match again what Blue Falls had already in their concept of the rear yard along their area as well.

Chairman Smolik stated that there was a monument sign and also a twenty foot pole sign.

Mr. Anderson commented that one of the items that they had talked about with the City regarding some variances. He stated that the concept was still looking at what variances they would like to apply for and that they would be working with the City to go over those. He mentioned that if their sign stayed at the location that was on the site plan currently, it would have to be a pole sign based on the City's current zoning setbacks. He stated that they really liked the idea of a ground monument sign but it would have to move to a different location and some of those things were still under discussion. He mentioned that they would be applying for variances for sign coverage not sign location because they understood what type of sign could go in that type of location.

Chairman Smolik asked if there were any questions or comments from the Administration.

Director Lieber stated that she appreciated the applicant working with the City to submit provisions and additional information that was requested like including the landscape plan. She explained that one of her recommendations was to consider a split based block for the dumpster enclosure rather than the painted block just for long term maintenance. She discussed that the applicant submitted a traffic impact study that had some recommendations but it was regarding

the build out of the site and future development and gave kind of a worst case scenario and was not just that first phase. She indicated that until that second phase was set in stone, that it would be wise to just put that on the back burner until that last phase were to come before them so that they would know more regarding trip generation and could be reviewed with greater certainty. She stated that regarding signage, she recommend that the Commission exclude in their vote the sign package. She added that they had discussed eliminating it from their proposal but that it was helpful to see where signs would be placed on the property and on the building for scale. She explained that the signs were not zoning compliant and that a tiny building equaled a tiny amount of signage. She said that the sign variances should be submitted to BZBA but not included in the Commission's approval.

Chairman Smolik asked if there were any other questions or comments from the Administration.

City Engineer Rodriguez stated that he concurred with what the Planning Director had stated regarding the traffic impact study and they decided to hold off at the time being because Center Ridge Road had just been repaved. He indicated the traffic impact study made mention of creating new turning lanes there but with that only being one phase of the project, they would hang on to the recommendation until the project went in and then they could go back and check it within the next development phase. He explained that the developer needed to make sure that the pond was clean and in working order and that the City through its' process, check and make sure that it did meet the requirements of all three departments for the lot coverage.

Chairman Smolik asked if there were any questions or comments from the public.

Dennis Boose 6405 Denise Drive, North Ridgeville, OH 44039.

Mr. Boose welcomed the applicant to the community. He stated that he was happy to see a vinyl fence on the rear of the property so that it would match what the car wash currently had. He mentioned that he had a question as to what kind of fencing or buffer would be going to be along the east side of the property behind the homes on Olive. He stated that he wanted to make sure there was proper fencing and buffer there because the business opens at 5:30 in the morning and it would be dark and headlights from those cars would be going into those properties and he wanted to make sure that those were shielded. He discussed that the ordering was near the rear of the property and there would be a speaker system there that would cause noise that everyone would hear and wanted to hear more about the decibel levels of that and whatever shielding they would have behind the turn that would help the residents not hear all of that especially at 5:30 in the morning.

Chairman Smolik asked if the applicant could speak to the comments regarding the ordering system.

Mr. Anderson remarked that he couldn't talk too much regarding ordering other than general distances and things like that. He said that directly next to the property, just to the east of the property, was zoned business and they did not have the vinyl fence coming down the side against

the additional commercial business that was next door. He mentioned that they did have the vinyl fence wrapped around to encompass that area to block it from the additional residential properties that were up in that area. He stated that all he could say about the ordering was that the distance was 30 or 40 feet at least as you got into the back. He remarked that from a noise standpoint, he wasn't a sound expert. He discussed that it was a decent distance before you got to the homes.

Chairman Smolik asked if there were any other questions or comments from the general public.

None were given.

Chairman Smolik asked if there were any questions or comments from the Commission.

Member Ali stated that he wanted to see regarding landscaping and sound buffering, the more the better. He mentioned that there were a lot of houses in that area and the car wash was noise for them as well. He remarked that the more landscape and the denser it would help absorb the noise.

Member Abens discussed that he understood it was a drive-through but asked if there were any accommodations being made for possible walk-ups.

Mr. Shimandle explained that currently it was Scooter's policy for all of their kiosks that no walk-up traffic would be allowed. He stated that it would have to be in a vehicle.

Member Ali asked if there would be anything outside of the building.

Mr. Shimandle remarked that there would not be except for the baristas may be taking orders under certain circumstances outside so that it would speed the folks through the lines.

Chairman Smolik asked regarding the single drive they would share with the car wash, if there was an ingress easement or how it would be set up so that multiple businesses could use that same drive.

Mr. Anderson discussed that on the site plan it showed that there was an entrance exit agreement that would be shared not only with Blue Falls but also AutoZone. He stated that there was a way to get in through AutoZone and traverse to the side as well. He mentioned that there was an easement in place for that. He stated that the site would update the easement and make sure that it was fully encapsulating all the way down to the end of the property and back out to the other side as well. He said that the easement would be updated but was currently in place and shared. He explained that there was a shared sanitary sewer user agreement and there were also shared storm water easements. He stated that one of the things they discussed with the Engineer during the pre-hearing was making sure that the City had copies of those easements and agreements. He indicated that they were showing an overall storm water maintenance and that it was on the comprehensive maintenance packages as far as the storm water would help to spur all of that to

work together to make sure that the basin stays clean from a storm water stand point.

Councilman Abens stated that he wanted to make sure that any approvals would just be for Scooter's itself and not the adjacent property behind it.

Vice Chairwoman Swallow remarked that was correct.

Mr. Anderson stated that the only thing they were doing on the property next to it currently was site preparation, so just bringing that pad up to grade along with the general grade of Scooters. He explained that there would be no additional buildings.

Chairman Smolik stated that for the next phase they would have to come back.

Vice-Chairwoman Swallow stated that she would make a motion to approve but didn't care for the idea of a standalone drive-through with no pedestrian opportunity especially in that area of the City. She explained that Center Ridge Road had just been widened and there were some great walking, multi-purpose paths along there and it would be close to the high school and other businesses. She mentioned that she didn't know if there was anything in the code that prohibited a standalone drive-through therefore, she stated she would move to approve.

Councilman Abens remarked that he agreed and wasn't wild about a drive-through in that particular location and his concern was that if, more like when the business failed, the City would have a building sitting there for quite a while that would basically be a single use building and was a concern of his.

Moved by Smolik and seconded by Ali to revise the motion to include the condition of a split face block for the dumpster and also exclude the sign package from the improvement plans.

A roll call vote was taken and the motion carried.

Yes – 5 No – 0

James Cahlik, State Farm, 36525 Center Ridge Rd, North Ridgeville, OH 44039, PPN 07-00-028-103-140

Applicant: Anthony Cerny, Architectural Design Studios, Inc., 620 E Smith Rd, Suite E2, Medina, OH 44256. Proposal consists additional parking. Property is zoned B-5/R-1.

Application and Administrative comments were read.

Chairman Smolik asked the applicant to state his name and address for the record and explain the application.

James Cahlik, 24700 Center Ridge Rd, Suite 315, Westlake, OH 44145.

Mr. Cahlik explained that he was a State Farm agent in Westlake and that he purchased a home in North Ridgeville hoping to move his office to North Ridgeville. He stated that he was a small operation with two full-time employees and low traffic. He mentioned that they don't have many folks going into their office but will occasionally have in-person meetings and was hoping to make North Ridgeville home.

Chairman Smolik asked for questions or comments from the Commission.

None were given.

Chairman Smolik asked if there were any questions or comments from the Administration.

Director Lieber stated that she appreciated the owner and architect working with the City in attending the staff review and worked through some of the unusual aspects of the B-5 district. She explained that they had discussed the parking situation and the requirement that 14 parking spaces would be provided but learned that they won't have that many employees and that it wasn't a site where there would be a lot of client traffic. She mentioned that the Commission could approve some combination of both paved and land banked parking to satisfy the 14 space need. She stated that the plan currently showed 9 paved and some additional to meet that requirement so that should it be necessary one day, the applicant could go ahead and go through the permit process to construct the rest but they wouldn't take up unneeded green space at this time. She explained that the driveway in its' current location did not meet the City's 15 foot width code requirement for any new driveway. She discussed that it was preferable to maintain the driveway in its' current location, rather than looping it around the other side of the building and create additional curb cut on that side. She asked for some discretion from the Commission to consider the existing condition situation of where the current curb cut was located and that it would improve the existing condition by adding a couple feet to the driveway width. She explained that in a B-5 district that there were some unique architectural characteristics that were meant to be incorporated for even changes of use in the district but looking further into the building, the house was built in 1895 and it retained the architectural characteristics of that time. She stated she didn't think it would be appropriate to try and artificially change it to a different style of architecture and that it was fine the way it was without making any changes to the structure. She explained that some of the other requirements were that the applicant would replace a tree that was going to be cut down on the property which was a requirement of that section for tree replacement for trees lost. She discussed that there was also a requirement to install post-type street lights and to run utilities underground but that was an area where she had not seen examples where other properties in the B-5 had installed that kind of lighting. She remarked that perhaps that was an area of discretion that the Commission may consider waiving the requirement for the project that was an existing building and existing structure. She explained that the one area the Administration thought was important to include was to show that walk path/sidewalk extension across the front of the property. She further explained that the property was right where the sidewalk or multi-purpose path ended and the project would carry that path one parcel further and get the City a little closer to connecting with the sidewalks at the next side street.

Moved by Swallow and seconded by Ali to approve the application with the conditions of paved and land banked parking spaces, the tree replacement, the driveway placement and the sidewalk extension.

A roll call vote was taken and the motion carried.

Yes – 4 No – 0 Abstained – 1

Root Development, east side of Root Rd. just south of Lorain Rd, North Ridgeville, OH 44039, PPN's 07-00-011-103-077, 07-00-014-106-009, 07-00-011-103-227

Applicant: Ryan Schultheiss, 36097 Westminister Ave, North Ridgeville, OH 44039. Proposal consists of final plat for Harvest Pointe phase 3. Property is zoned R-1.

Application and Administrative comments were read.

Chairman Smolik asked the applicant to state his name and address for the record and explain the application.

Mr. Schultheiss stated that he was applying for final plat approval of Harvest Pointe phase 3 and would likely be the last phase in Harvest Pointe. He discussed that phase 3 consisted of seventeen sublots, eight of which were cluster lots. He further stated that phase 3 would continue on and be covered under the homeowners association that they had set up for phases one and two as well. He remarked that it would be the same architectural structure, the same old style, same landscaping and signage along Root Road and would be a continuation of the first two phases.

Chairman Smolik stated that they had an amended primary plat that was handed to the Commission after the application and had the chart of open space and dead space. He asked if that was for the entire subdivision or just for the current phase.

Mr. Schultheiss remarked that that was for the entire subdivision which was why they didn't include it in the construction plans. He explained that it was for the entire subdivision and just to show it in totality. He further explained that they had a lot of open space to the rear of the property and wetlands there which impacted their construction but helped meet the open space requirement. He stated that they were also meeting the cluster home requirement for the size of the parcels.

Chairman Smolik asked for questions or comments from the Commission.

None were given.

Chairman Smolik asked for questions or comments from the Administration.

Director Lieber explained that the final plat application was being considered under Chapter 1282 which required that the final plat be approved by Planning Commission and stated that in addition to the final plat that detail plans include the infrastructure improvements, including street elimination, a detailed landscape plan of all open space and recreation areas and any final covenants. She stated that in the submittal that she received she had not noted any detail on the landscaping, especially on the area adjacent to Root Road where it said landscaping and sign easement and that there wasn't any detail on the subdivision sign and had not seen any street lighting proposed. She discussed that she did not get a copy of the updated plan so if anything else had been submitted that did include that information she had not received that ahead of the meeting.

Mr. Schultheiss stated that they did revise the plans to include street lighting based on Director Lieber's comments at the pre-hearing meeting. He remarked that the street lighting was based on Polaris' estimate but ultimately it was decided by Ohio Edison as they design the electrical plan and he had not received that from them yet. He discussed that they put the location of the sign on there but he didn't understand the comment about wanting a detailed landscaping plan and maybe that was a misunderstanding on his part. He stated that they put the location of the sign but not an actual rendering of what it would look like. He explained that it would be identical to the signage and the landscaping on phase 1 along Root Road. He mentioned that if they wanted a drawing or rendering that they could put that together. He added that there was a comment regarding including a tree in the front yard which they also added into the plan and submitted after the fact.

Chairman Smolik asked for questions or comments from the Administration.

None were given.

Chairman Smolik asked for questions or comments from the general public.

None were given.

Councilman Abens asked that as far as the drainage was concerned, were they retention ponds or detention basins.

Mr. Schultheiss stated that they were retention ponds.

Councilman Abens asked if the HOA would be responsible for them.

Mr. Schultheiss remarked that they would.

Councilman Abens asked that along Root Road, he was the one that asked for the mounding and trees planted there because those folks close to Root Road, he would be the one to get the call when trucks go by and they're noisy and he appreciated that they did put up mounding and put in some trees.

Mr. Schultheiss mentioned that for phase 3 they were going to set the first lot back a little bit more from Root Road, not only for the reasons Mr. Abens stated, but also for marketability for their purposes. He stated that it was a good lesson learned in phase 1 and that they put them a little closer to Root Road than what they should have.

Councilman Abens asked if he was concerned with the marketing slow down on purchasing of new homes.

Mr. Schultheiss remarked that there was certainly a slow down in phase 2 that they were currently constructing. He stated that they had noticed a slow down over the past couple of months as far as buyer traffic was concerned. He said that as far as phase 3 was concerned that they may wait a bit on the development work just to wait for costs to come down. He explained that costs were still high for materials and labor but they were in the process of working through that.

Chairman Smolik stated that he had a question for the Administration as to whether the subdivision sign, landscaping plan and the street lighting could be administratively approved.

Director Lieber remarked yes, that if the Commission was agreeable to the applicant stating that the sign and landscaping would match, then they could just verify that that's the case when it would be submitted.

City Engineer Rodriguez stated that it was correct that typically the developer and OE (Ohio Edison) submit an overall lighting plan of the development and then the engineering department would make sure that it was good for spacing and make sure that there is one at the intersection for intersection lighting and then send that back to OE and they go ahead and do their work.

Moved by Smolik and seconded by Swallow to approve Harvest Pointe subdivision phase 3 with the condition the landscaping and sign shall match the previous two phases.

A roll call vote was taken and the motion carried.

Yes – 5 No – 0

Planning Commission Bylaw proposed updates

Director Lieber explained that on August 1st, City Council adopted seven pieces of legislation that would update various chapters of the zoning codes and the Commission was pretty familiar with what those were since they reviewed and recommended them. She stated that they did change the role of Planning Commission somewhat in terms of, for example, they would now be reviewing conditional use permits and similar use determinations that were previously the review of BZBA. She discussed that it was time to take a look at their bylaws for those areas that may now be out of step with the new procedures that were in place. She stated that she went through and looked for areas of general improvement in addition to specific areas where those types of

powers may be enumerated, either by the BZBA bylaws or Planning Commission bylaws and tried to propose some general enhancements that outlined more of the Boards role and eliminate any inconsistency with the new code updates that would be effective just before Labor Day. She added that she wanted to give the Commission a chance to take a look and read through and see if they had any questions, comments or suggestions. She mentioned that if they felt comfortable adopting them at the meeting that would be fine and if they didn't it would be ideal to have their bylaws updated by the time the City would be implementing the new procedures with the intake and reviews that would be set forth in the code.

Chairman Smolik asked if she had a list of what changed without them having both right next to each other.

Director Lieber stated that in some cases it was consolidating like the officers and duties section and some of the information that was spread out in several sections into that election and duties of officers section. She explained that it would be the same officers, no change in their responsibilities. She discussed that regular meetings and special meetings remained about the same. She stated that regarding attendance she did add the requirement to notify the Clerk's office by a minimum time if they didn't have a quorum and so that someone would be aware that they would be absent. She stated that in cases there are certain powers that were delegated to CBO that now might be Planning Director and made those changes where necessary. She added that new business would be just that and that there was no break out of applications versus referrals, it would just be new business. She explained that a lot of it was similar just reorganized to have it be chronological through the establishment of the Board and Officers and then application and then the meeting part and then the decision part rather than it being disjointed. She remarked that it might be easier if she went through and put together a list of bullet points for a more detailed analysis.

Chairman Smolik stated that he was just wondering what the major changes would be. He asked if it required a vote at that meeting.

Director Lieber explained that by the September meeting the new codes would be effective and it would be perfectly acceptable to amend the bylaws at that meeting as well.

Chairman Smolik indicated that he wanted additional time to review them. He then asked the Commission members if they were ready for a vote that evening or if they wanted to wait and take a further look at it.

Vice-Chairwoman Swallow stated that they could wait and take a further look at it. She added that she had a question for the Administration and the Commission members regarding the time of the meetings since they set their own times. She asked if everyone liked the current time at 7:00 p.m. She added that she understood that as a staff member, staying after for them after a full day of work at times could be rough to wait for a meeting to start at 7 o'clock. She explained that obviously they needed to make sure that members of the public could be in attendance and speak on issues before the Board and that it worked for applicants as well but she wondered if there

were any thoughts on moving that time up to 6 o'clock.

Councilman Abens responded that he didn't necessarily agree with the 6 o'clock time change because it would put a hardship on many of the citizens because of their work and family obligations. He added that through Council they changed their time back to 7 o'clock but when it was mentioned to change it to earlier a few Council members stated that that was not possible for them because of their jobs. He explained that he understood that it may not be an issue for the present members but it might be an issue for future members that 6 o'clock or 6:30 may be hardship. He remarked that 7 o'clock for employees could be a bit much but he was sorry about that.

Member Ali stated that 6 o'clock or 6:30 would be tough for him as well and 7 o'clock would be better.

Director Lieber mentioned that if the bylaw updates wasn't going to be voted on that night she would put together a couple bullet points so that the Commission could focus their attention as they review them and what the differences were.

Chairman Smolik asked if there were any questions or comments regarding the bylaws.

None were given.

ADJOURNMENT:

The meeting was adjourned at 7:52 PM.

James Smolik
Chairman

Tina Wieber
Deputy Clerk of Council

Tuesday, September 13, 2022
Date Approved

From: [Kim Lieber](#)
To: twieber@nridgeville.org
Subject: PC Bylaws, summary of changes
Date: Wednesday, August 10, 2022 1:55:23 PM

Tina,
Can you please email the PC members and provide them with the current bylaws, proposed bylaws and these notes?
Thank you!
Kim

Summary of Bylaw Changes:

Many of the bylaw changes can be classified as "housekeeping." I've attempted to group articles in a manner better following the chronological order of the Commission's formation, meetings and notices, meeting procedures, actions, etc.

Officers and Duties

- Merged sections and some reorganization of content
- Removed reference to CBO as designated "official" as each city representative (CBO, Engineer, Planning Dir, Law Dir) has important role to play advising the PC

Meetings and Notice

- Moved Procedures portion of this article to a later article
- Reordered sections based on chronological order
- Removed bulletin board posting requirement (subject to pending Charter change)

Moved up Attendance article, added requirement to provide notice of absence by noon the day of the meeting, simplified language

Created separate Procedures section, merged with former Requests for Action section

- No longer using "Requests for Action" language, but referencing applications instead
- In Order of Business section, gave Chairperson the ability to change order of agenda items
- Added section for Consideration of Agenda items, governing procedure for hearing of each application
- Added Executive Session section

Moved votes section to Actions of Commission article.

Please let me know if you have any questions.

Kim

Kim Lieber, AICP

Director of Planning & Economic Development
City of North Ridgeville



Planning Review

August 31, 2022

Project: Culver's Restaurant
Address: 32574 Lorain Road
PPN: 07-00-003-101-010, 07-00-004-109-043
District: B-4 Commercial Parkway District

Project Summary:

The proposal consists of constructing a new drive through restaurant on a 1.57-acre lot (excluding ROW) to be split off from the Iannelli Autocars property on Lorain Road. The property adjoining the site is zoned B-4 Commercial Parkway District, with a small portion of property across Lorain Road zoned B-3 Highway Commercial District.

A drive-through restaurant is a permitted use in the B-4 District. The 4,393 square foot building meets all required setbacks. The building is primarily comprised of manufactured stone and hardie siding in neutral colors with EIFS accents. Door and window frames will be natural aluminum with blue awnings. An LED light band is shown just under the parapet of three tower elements. A fenced patio will provide for outdoor seating. The dumpster enclosure located behind the building will be a combination of manufactured stone veneer and siding to match the building with painted synthetic wood gates.

Decorative landscaping is shown around the building perimeter and patio, around the dumpster enclosure, within parking lot islands and around the ground sign. Several trees are proposed. Landscape irrigation is provided for the planting beds. A fence is proposed along the rear and west property lines.

The site will be served by a single existing curb cut. More than sufficient parking is proposed. Code requires 52 spaces and plans show 58 spaces. The double drive through queue will accommodate 14 vehicles fully within the double drive through with an additional 10 spaces reserved for vehicles waiting for orders after the pickup window. The applicant submitted a trip generation analysis for the restaurant. Weekday peak trip generation is reported at 144 trips, below the threshold for restaurants listed in Chapter 1210 which would have required a full traffic impact study.

Parking lot lighting levels and fixture types appears code compliant. Signage is conceptually shown however no details on size, height, area or location were provided. It does not appear that the proposed monument sign meets the required setback from the ROW.

Recommendations:

- Submit details of the proposed fence.
- Submit cut sheets of all light fixtures, including decorative building lights.

- The proposed sign package as shown will require numerous variances for area of building signage and location of the ground sign. Modify building signage proposed to reduce request. Relocate monument sign or consider an alternate design to meet code.

Engineering Fee Paid: \$ _____

Receipt No.: _____

☐ Cash ☐ Check - Check No.: _____

(See attached for description of fees.)

Planning Commission & Bldg. Admin. Fees: \$ 112.00

Receipt No.: 02018745

☐ Cash ☐ Check - Check No.: _____

(See attached for description of fees.)



CREDIT AM. EXPRESS

RECEIVED

**CITY OF NORTH RIDGEVILLE PLANNING COMMISSION
REQUEST FOR ACTION**

Received: AUG 19 2022 Date Released to Planning Commission: _____

Date of Planning Commission Meeting: _____ (Unless otherwise notified.)

APPLICANT INFORMATION AND REQUEST

APPLICANT:	<u>Joshua Clark</u>	PROPERTY OWNER:	<u>Antonio and Maria Iannelli</u>
COMPANY NAME:	<u>216 Dirt Holdings. LLC</u>	ADDRESS:	<u>32626 Lorain Road</u>
ADDRESS:	<u>PO Box 591</u>	CITY / STATE:	<u>North Ridgeville</u> ZIP: <u>44039</u>
CITY / STATE:	<u>Rhineland, WI</u> ZIP: <u>54501</u>	PHONE NO.:	<u>440-327-0667</u>
PHONE NO.:	<u>715-499-2181</u>	SIGNATURE:	<u>[Signature]</u>
SIGNATURE:	<u>[Signature]</u>	(Owner's original signature must be submitted with application.)	
EMAIL ADDRESS:	<u>joshuaclark@gmail.com, aappell@bramhall-engineering.com</u>		

Please provide an email address, fax number or mailing address to send Administrative comments in advance of the meeting.

LOCATION OF PROPERTY/ADDRESS: <u>Just east of 32626 Lorain Rd - new address 32574 Lorain Rd</u>
PERMANENT PARCEL NO.: <u>Portion of 07-00-003-101-010 & 07-00-004-109-043</u>
ZONING OF PROPERTY: <u>B4</u>
ZONING OF ADJACENT PROPERTY TO: <u>NORTH B4</u> <u>EAST B4</u> <u>SOUTH B4</u> <u>WEST B4</u>
DESCRIPTION OF REQUEST: <u>Proposed lot split to create a 1.7431 acre lot. Proposed final development plans for a 4,393 sqft single story Culvers Restaurant with 58 parking spaces.</u>

Have the Planning Commission or Board of Zoning and Building Appeals considered any prior request concerning this property? Yes ☐ No ☒

If yes, list dates and nature of each: _____

On the attached form, list the current record title owners(s) adjacent to the property of request. Include on this list the record title owner(s) name(s), permanent parcel number(s) and mailing address(es). Adjacent properties shall include those properties bordering to the north, south, east, west, across a street from the property involved and those properties meeting corners of the property involved.

In the event of property transfers, the applicant shall be responsible for providing an updated list of current adjacent record title owner(s) to the office of the Clerk of Council twenty-five days prior to the date of any public hearing when the applicant will appear on the agenda.

PLANNING COMMISSION USE ONLY:

☐ APPROVED

☐ DISAPPROVED

All approvals are conditional until applicant fully meets the requirements of applicable City ordinances enforced by the Chief Building Official, City Engineer, Fire Department and Police Department with respect to safety and design.

☐ Board of Building & Zoning Appeals Approval Required

☐ Conditions as set forth by the Commission on this date are: _____

Date: 9-27-2022

Signature: [Signature]

(Presiding Officer at Meeting)

Return completed form to Building Dept., 7307 Avon Belden Road, North Ridgeville, Ohio, 44039 after Commission action.

TO BE FILLED OUT BY APPLICANT

I, Joshua Clark

(Print Name)

(Signature)

verify that the following are the names, mailing addresses and permanent parcel numbers of the current record title owners adjacent to the property of request for:

Applicant: Joshua Clark

Owner: Antonio and Maria Iannelli

Project Address: Just east of 32626 Lorain Rd - new address 32574 Lorain Rd

THE FOLLOWING INFORMATION MAY BE OBTAINED AT THE LORAIN COUNTY AUDITOR'S OFFICE,
ADMINISTRATION BUILDING, 226 MIDDLE AVENUE, ELYRIA, OHIO 44035.

PHONE: 440-329-5207

WEBSITE: WWW.LORAINCOUNTY.COM/AUDITOR

	ADJACENT PROPERTY OWNER / ADDRESS	PARCEL NUMBER
✓1	Owner:HRUSCH PEARL E TRUSTEE Address:32650 LORAIN RD <i>36090 JASON DR. GRAFTON OH. 44044</i>	0700003101011
✓2	Owner:HRUSCH PEARL E TRUSTEE Address:REAR LAND	0700004109042
✓3	Owner:LORAIN GATEWAY DEVELOPMENT LLC Address:LEAR NAGLE RD <i>30412 CRESTVIEW DR. DAY VILLAGE OH 44140</i>	0700004109059
✓4	Owner:QSR REAL ESTATE HOLDINGS LLC Address:LEAR NAGLE RD <i>6815 LAKE AVE ELYRIA OH. 44035</i>	0700004109057
✓5	Owner:MCDONALDS REAL ESTATE COMPANY Address:32528 LORAIN RD <i>416 STEPHEN PAYNE ELYRIA OH 44035</i>	0700004109053
✓6	Owner:MAX & AVERY LLC Address:32523 LORAIN RD <i>4901 STRAFORD CT. N.D. OH. 44079</i>	0700003102064
✓7	Owner:BKOH18 LLC Address:32635 LORAIN RD <i>18625 TOPHAM ST. TARRANA CA. 91335</i>	0700003102080
8		
9		
10		

SEE REVERSE SIDE FOR ADDITIONAL LISTINGS.

OFFICE USE ONLY

CBO Verification By: *Joshua Clark*

Date / Time Stamp: _____

BZA / PC Verification By: _____

**CITY OF NORTH RIDGEVILLE PLANNING COMMISSION
RECOMMENDATIONS**

Name of Applicant:	Joshua Clark
Name of Owner:	Antonio & Maria Iannelli
Date Submitted for Consideration:	8-19-2022
Date to Return to Planning Commission:	8-24-2022
Regarding: Proposed Culvers Restaurant – 32574 Lorain Road	

RECOMMENDATIONS:

Application appears code compliant.

No information provided regarding signage, provide application under separate Building Permit.

(use additional sheets if necessary)

Department Head Signature & Title: _____

 CDR

Form prepared by the Office of the Clerk of Council 6-30-99. Amended 12-13-2005.

Comments and recommendations by Administrative Officers, if any, shall be forwarded to the Commission Secretary not later than five (5) business days prior to the Commission meeting at which action is scheduled to be taken on the matter. (Planning Commission By-Laws, Article V, Section 3)
Comments received after the deadline will be distributed to the Members the night of the meeting.

**CITY OF NORTH RIDGEVILLE PLANNING COMMISSION
RECOMMENDATIONS**

Name of Applicant:	Joshua Clark, 216 Dirt Holdings, LLC, P.O. Box 591, Rhineland, Wisconsin, 54501
Name of Owner:	Antonio and Maria Iannelli, 32574 Lorain Rd, North Ridgeville, OH 44039
Date of Planning Commission Meeting:	Tuesday, September 13, 2022
Date to Return to Deputy Clerk of Council:	Thursday, September 01, 2022
Regarding: Proposed lot split to create a 1.7431 acre lot and development plans for a 4,393 sq ft single story Culvers Restaurant with 58 parking spaces Permanent Parcel Nos. 07-00-003-101-010 & 07-00-004-109-043	

Recommendations:

Please review Plan Review submitted to CBO Fursdon.

(Use additional sheets if necessary.)

Department Head Signature: Mike Uhnak _____ **Title:** Assistant Fire Chief

Form prepared by the Office of the Clerk of Council 6-30-99. Amended 03-22-2019.

Comments and recommendations by Administrative Officers, if any, shall be forwarded to the Commission Secretary not later than five (5) business days prior to the Commission meeting at which action is scheduled to be taken on the matter.
(Planning Commission By-Laws, Article V, Section 3)

Comments received after the deadline will be distributed to the Members the night of the meeting.

Guy Fursdon

From: Megan Cabrera <mcabrera@oaarch.com>
Sent: Tuesday, August 23, 2022 11:52 AM
To: Guy Fursdon
Cc: Aaron Appell
Subject: Culver's of North Ridgeville

Hello Guy,

Please see the information below for the Architect and Engineer that have prepared the drawings submitted.

Jeff Ernest
Registered Architect
0714382

Lowell Larson
Professional Engineer
E-83559

Please let me know if you need anything else. We will be mailing our document for plan review and permit today and they should arrive to your office by tomorrow morning or early afternoon.

Thank you!

Megan Cabrera
Ollmann Ernest Martin Architects
200 South State Street
Belvidere, IL 61008
815-544-7790....phone
mcabrera@oaarch.com

This message and any attachments are confidential to the ordinary user of the e-mail address to which it was addressed and may also be privileged. If you are not one of the addressees you may not copy, forward, disclose or use any part of the message or its attachments. If you have received this message in error, please notify the sender immediately by return e-mail and delete it from your system. The sender does not accept liability for any errors or omissions in the context of this message that arise as a result of Internet transmission. Sender accepts no liability for any damages caused by any virus transmitted by this email.





801 Moore Road • Avon, OH 44011
(440) 934-7878
(440) 934-7879 Fax

BRAMHALL
ENGINEERING &
SURVEYING COMPANY

LETTER OF TRANSMITTAL

DATE	8-19-2022	JOB NO.	BFSC #22-5800
ATTENTION	Guy Farsdon		
RE:	Building Department		

TO North Ridgeville City Hall
2302 Avon Belden Road
North Ridgeville, OH 44039

WE ARE SENDING YOU ☒ Attached ☐ Under separate cover via _____ the following items:

☒ Improvement Plans ☐ As-Built Plans ☐ Site & Grading Plan ☐ Foundation Check ☐ Final Grade

☐ Specifications ☒ Record Plat/ Boundary Survey ☒ supporting documents

COPIES	DATE	NO.	DESCRIPTION
10			Construction Plans for Culver's Restaurant Improvements
10			Lot Split/legal descriptions for Culver's Restaurant
10			Architectural Plans for Culver's Restaurant
1			Drainage Calculations Report
1			Trip Generation Letter
1			Planning Commission Application for Culver's
1			Application Fee

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ Approved as submitted ☐ Resubmit _____ copies for approval

☐ For your use ☐ Approved as noted ☐ Submit _____ copies for distribution

☐ As requested ☐ Reviewed as submitted ☐ Reviewed as noted

☐ For review and comment ☐ _____

☐ FOR BIDS DUE _____ ☐ PRINTS RETURNED AFTER LOAN TO US

REMARKS _____

COPY TO _____

SIGNED:

Thank you,
Paul Spill

If enclosures are not as noted, kindly notify us at once.



TMS Engineers, Inc.

Transportation Management Services

2112 Case Parkway South, #7 • Twinsburg, Ohio 44087

www.TMSEngineers.com

June 20, 2022

Mr. Joshua F. Clark
216 Dirt Holdings, LLC
PO Box 591
Rhineland, WI 54501

**Re: Proposed Culver's Restaurant
North Ridgeville, Ohio
Trip Generation Analysis**

Dear Mr. Clark:

TMS Engineers, Inc. has performed the following trip generation analysis for the proposed Culver's Restaurant in North Ridgeville, Lorain County, Ohio. The development site is located north of Lorain Road and west of Lear Nagle Road (See **Location Map, Figure 1**).

The purpose of the trip generation analyses is to estimate the traffic that will be generated by the Culver's Restaurant. The site plan can be seen in **Figure 2**. The following are the results of our trip generation analysis.

SITE GENERATED TRAFFIC

Calculating future total driveway trips requires an estimate of the traffic generated by the proposed development. The most widely accepted method of determining the amount of traffic that the proposed development will generate is to compare the proposed land use with existing facilities of the same use. The Institute of Transportation Engineers (ITE) has prepared a manual titled "**Trip Generation Manual**", which is a compilation of similar traffic generation studies to aide in making such a comparison. The most recent update of this manual is the 11TH edition and was utilized for this analysis.

The proposed development is expected to consist of the following land use:

- **4,345 Square Foot Fast Food Restaurant**

The proposed Culver's Restaurant will not open for business until mid-day so the typical AM peak hour generation data will not be included in this study.

Mr. Joshua F. Clark
June 20, 2022
Page 2

PROPOSED TRIP GENERATION CALCULATIONS

Trip generation calculations were performed utilizing data contained in the **Trip Generation Manual, 11TH Edition** and the methods outlined in the (ITE) **Trip Generation Handbook**. Based on the previously discussed trip generation analysis procedures, the table below shows the estimated site generated traffic during the PM peak hour for the proposed restaurant. A copy of the trip generation worksheet can be seen in **Figure 3**.

NEW TRIP GENERATION

ITE TRIP GENERATION			TRIPS	
ITE CODE	DESCRIPTION	Units	Weekday PM Peak Hour of Adjacent Streets (Enter/Exit)	
934	Fast-Food Restaurant With Drive Through	4,345 SF	75	69
TOTAL NEW TRIPS			144	

The previous table shows that the proposed Culver's Restaurant is expected to generate a total of 144 trips in the PM peak hour.

If you have any questions or need additional information, please do not hesitate to contact me.

Very truly yours,

TMS Engineers, Inc.



Andrew Pierson, P.E.
TMS Engineers, Inc.



enclosures



TMS Engineers, Inc.

2112 Case Parkway S., Unit 7,
Twinsburg, Ohio 44087
www.TMSEngineers.com

**Proposed Culver's North
North Ridgeville, Ohio
Trip Generation Analysis**

Location Map

**↑
NORTH
NOT TO
SCALE**

Figure: 1

Attachment



TMS Engineers, Inc.

2112 Case Parkway S., Unit 7,
Twinsburg, Ohio 44087
www.TMSEngineers.com

**Proposed Culver's North
North Ridgeville, Ohio
Trip Generation Analysis**

Site Plan

**↑
NORTH
NOT TO
SCALE**

Figure: 2

Attachment

FAST-FOOD RESTAURANT with DRIVE-THROUGH WINDOW
ITE CODE = 934

Date: **6/20/2022**

Trip Generation based on:

Size of Analysis Area: **4.345** 1000 Sq Ft

1,000 Square Feet Gross Floor Area

	Average Rate	Standard Deviation	Adjustment factor	Driveway Volume
WEEKDAY				
Average Weekday 2-way Volume	467.48	238.62	1.00	2031
Weekday Peak Hour of Adjacent Street Traffic				
4-6 PM Peak Hour Enter	17.18	0.00	1.00	75
4-6 PM Peak Hour Exit	15.85	0.00	1.00	69
4-6 PM Peak Hour Total	33.03	17.59	1.00	144

****The above rates were based upon those found in the ITE Trip Generation Manual, 10TH Edition.**

		% ENTER	% EXIT
WEEKDAY			
Average Weekday 2-way Volume	<i>Not Given — Use ITE Rates</i>	50%	50%
Weekday Peak Hour of Adjacent Street Traffic			
4-6 PM Peak Hour Total	<i>Not Given — Use ITE Rates</i>	52%	48%

Source: Institute of Transportation Engineers
Trip Generation Manual, 11TH Edition, September 2021

Remainder Parcel
August 2022

Legal Description
5.5520 Acres

Situated in the City of North Ridgeville, County of Lorain, State of Ohio, known as being part of Original Ridgeville Township Lot Numbers 3 & 4, and known as part of a parcel of land described in a deed to Antonio & Maria Iannelli as recorded in Instrument Number 1999-0587668 of the Lorain County Deed Records and further described as follows:

Commencing at a 1-inch iron pin found in a monument box at the intersection of the original centerline of Lorain Road (State Route 10) (R/W Varies) with the centerline of Lear Nagle Road (R/W Varies);

Thence South $46^{\circ} 41' 35''$ West, along the original centerline of said Lorain Road, a distance of 158.09 feet to a 1-inch pin found in a monument box at an angle point;

Thence South $42^{\circ} 03' 52''$ West, along the original centerline of said Lorain Road, a distance of 454.63 feet to the **True Place of Beginning** of land herein described;

Course 1: Thence continuing **South $42^{\circ} 03' 52''$ West**, along the centerline of said Lorain Road, a distance of **239.78 feet** to a point in the southeasterly corner of a parcel of land described in a deed to Pearl E. Hrusch Trustee as recorded in Instrument Number 2018-0665702 of the Lorain County Deed Records;

Course 2: Thence **North $32^{\circ} 43' 59''$ West**, along the easterly line of said Hrusch parcels, passing through a rebar set at 46.63 feet in the northerly right-of-way line of said Lorain Road, an overall distance of **867.65 feet** to a rebar set in the southerly line of a parcel of land described in a deed to Lorain Gateway Development, LLC as recorded in Instrument Number 2018-0665340 of the Lorain County Deed Records;

**Remainder Parcel
August 2022**

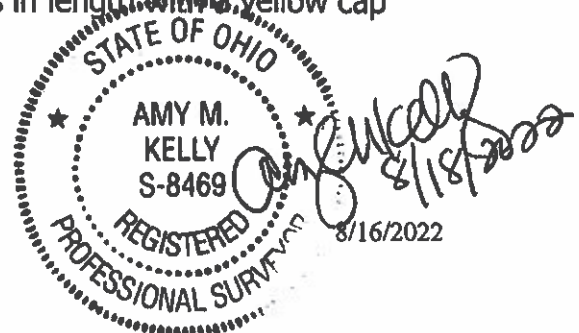
**Legal Description
5.5520 Acres**

- Course 3:** Thence **North 57° 25' 41" East**, along the southerly line of said Gateway Development, LLC parcel, a distance of **390.41 feet** to a rebar set in the westerly line of a parcel of land described in a deed to QSR Real Estate Holdings, LLC as recorded in Instrument Number 2021-0822771 of the Lorain County Deed Records;
- Course 4:** Thence **South 32° 43' 29" East**, along the westerly line of said QSR Real Estate Holdings, LLC parcel, a distance of **302.40 feet** to a rebar set;
- Course 5:** Thence **South 57° 32' 28" West**, a distance of **157.49 feet** to a rebar set;
- Course 6:** Thence **South 32° 33' 47" East**, passing through a drillhole set at 455.36 feet in the northerly right-of-way line of said Lorain Road, an overall distance of **502.03 feet** to a point in the centerline of said Lorain Road and the **True Place of Beginning**.

Containing within said bounds **5.5520 acres** of land (0.2478 ac. within R/W) of which 2.7990 acres lie within Original Ridgeville Township Lot Number 3 and 2.7530 acres lie within Original Ridgeville Township Lot Number 4, be the same more or less, but subject to all legal highways and easements of record as surveyed by Amy M. Kelly, P.S. 8469 for Bramhall Engineering & Surveying Company in June & July 2022. All bearings are intended to describe angles only. The basis of bearings used was a portion of the centerline of Lorain Road which was assumed to be South 42° 03' 52" West.

The above intends to describe a portion of Lorain County Permanent Parcel Numbers: 07-00-003-101-010 & 07-00-004-109-043.

All rebar set are 5/8-Inch in diameter by 30 inches in length with a yellow cap stamped "BRAMHALL 8073".



Split Parcel
August 2022

Legal Description
1.7431 Acres

Situated In the City of North Ridgeville, County of Lorain, State of Ohio, known as being part of Original Ridgeville Township Lot Numbers 3 & 4, and known as part of a parcel of land described in a deed to Antonio & Maria Iannelli as recorded in Instrument Number 1999-0587668 of the Lorain County Deed Records and further described as follows:

Commencing at a 1-inch iron pin found in a monument box at the intersection of the original centerline of Lorain Road (State Route 10) (R/W Varies) with the centerline of Lear Nagle Road (R/W Varies);

Thence South $46^{\circ} 41' 35''$ West, along the original centerline of said Lorain Road, a distance of 158.09 feet to a 1-inch pin found in a monument box at an angle point;

Thence South $42^{\circ} 03' 52''$ West, along the original centerline of said Lorain Road, a distance of 289.96 feet to a point in the southwesterly corner of a parcel of land described in a deed to McDonalds Real Estate Company as recorded in Instrument Number 2010-0337382 of the Lorain County Deed Records and the **True Place of Beginning** of land herein described;

Course 1: Thence continuing **South $42^{\circ} 03' 52''$ West**, along the original centerline of said Lorain Road, a distance of **164.67 feet** to a point;

Course 2: Thence **North $32^{\circ} 33' 47''$ West**, passing through a drillhole set at 46.67 feet in the northerly right-of-way line of said Lorain Road, an overall distance of **502.03 feet** to a rebar set;

Course 3: Thence **North $57^{\circ} 32' 28''$ East**, a distance of **157.49 feet** to a 5/8-inch iron rebar set in the westerly line of said McDonalds Real Estate Company parcel;

**Split Parcel
August 2022**

**Legal Description
1.7431 Acres**

Course 4: Thence **South 32° 43' 29" East**, along a westerly line of said McDonalds Real Estate Company parcel, passing through a rebar set at 411.52 feet in the northerly right-of-way line of said Lorain Road, an overall distance of **458.09 feet** to a point in the centerline of said Lorain Road and the **True Place of Beginning**.

Containing within said bounds **1.7431 acres** of land (0.1699 ac. within R/W) of which 1.2373 acres lies within Original Ridgeville Township Lot Number 3 and 0.5058 of an acre lies within Original Ridgeville Township Lot Number 4, be the same more or less, but subject to all legal highways and easements of record as surveyed by Amy M. Kelly, P.S. 8469 for Bramhall Engineering & Surveying Company in June & July 2022. All bearings are intended to describe angles only. The basis of bearings used was a portion of the centerline of Lorain Road which was assumed to be South 42° 03' 52" West.

The above intends to describe a portion of Lorain County Permanent Parcel Numbers: 07-00-003-101-010 & 07-00-004-109-043.

All rebar set are 5/8-inch in diameter by 30 inches in length with a yellow cap stamped "BRAMHALL 8073".



Storm Water Management Calculations for:

Culver's Restaurant Improvements
North Ridgeville, Ohio 44039

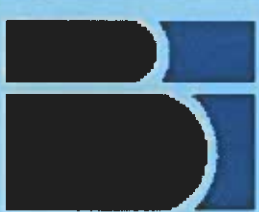


Prepared for:
216 Dirt Holdings, LLC
P.O. Box 591
Rhineland, WI 54501



Aaron P. Appell, PE.
State of Ohio Registered Engineer No. 75683

Prepared by:



Bramhall Engineering & Surveying Company
801 Moore Road
Avon, Ohio 44011

August 19th, 2022

Table of Contents

Table of Contents

Existing Soils Report

DR-C Storm Sewer Drainage Map

Drainage Areas & "C" Values Chart

10-year Storm Sewer Sizing Calculations

Water Quality Calculations

Water Quality Detail Sheet



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for **Lorain County, Ohio**



July 22, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

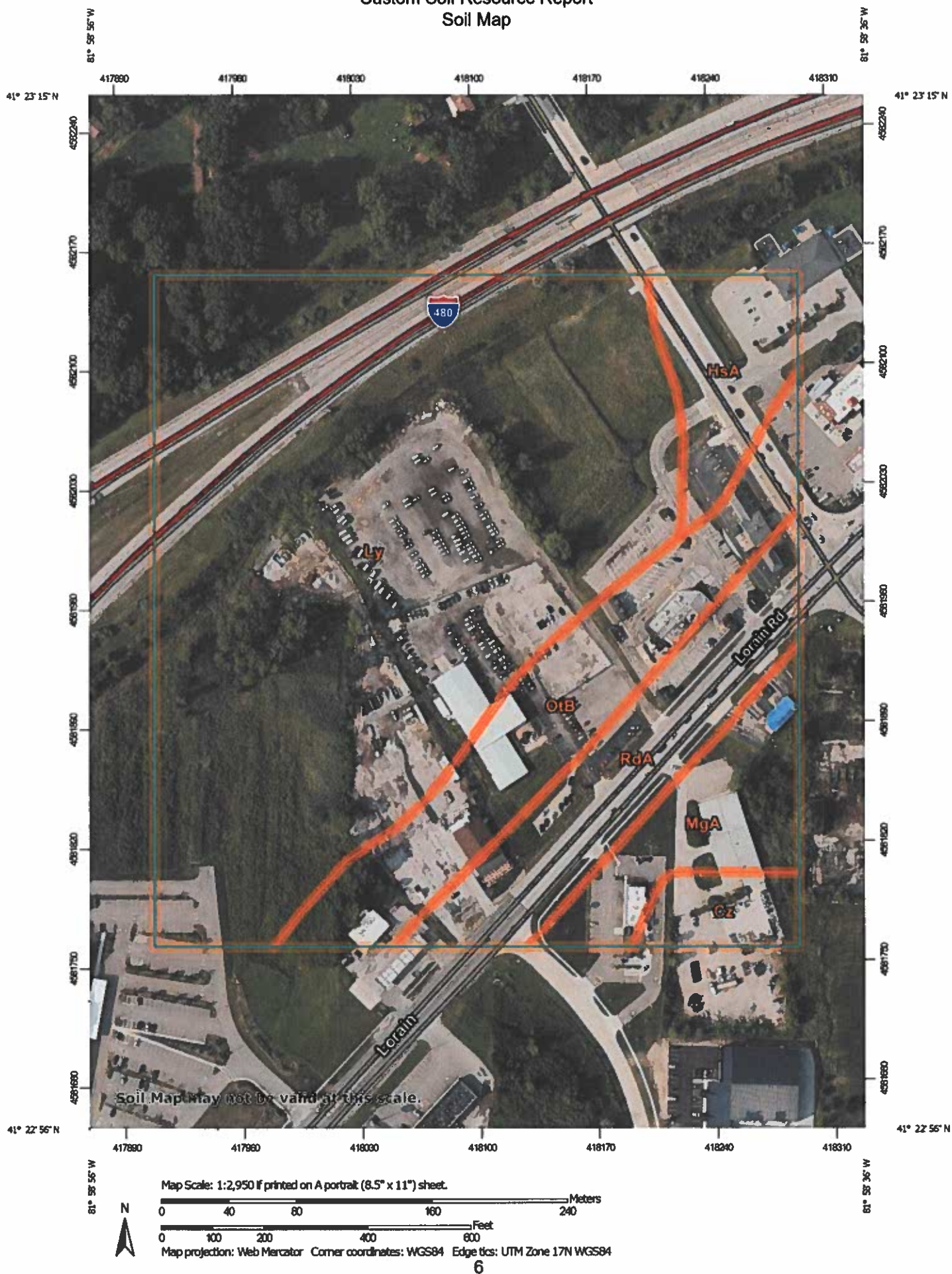
Contents

Preface.....	2
Soil Map.....	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8
Map Unit Descriptions.....	8
Lorain County, Ohio.....	10
Cz—Udorthents.....	10
HsA—Haskins loam, 0 to 2 percent slopes.....	10
Ly—Luray silty clay loam, 0 to 2 percent slopes.....	12
MgA—Mahoning silt loam, 0 to 2 percent slopes.....	13
OtB—Oshtemo sandy loam, 2 to 6 percent slopes.....	15
RdA—Rawson loam, 0 to 2 percent slopes.....	16

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)		Spoil Area
Area of Interest (AOI)		Stony Spot
Soils		Very Stony Spot
Soil Map Unit Polygons		Wet Spot
Soil Map Unit Lines		Other
Soil Map Unit Points		Special Line Features
Special Point Features		Water Features
Blowout		Streams and Canals
Borrow Pit		Transportation
Clay Spot		Rails
Closed Depression		Interstate Highways
Gravel Pit		US Routes
Gravelly Spot		Major Roads
Landfill		Local Roads
Lava Flow		Background
Marsh or swamp		Aerial Photography
Mine or Quarry		
Miscellaneous Water		
Perennial Water		
Rock Outcrop		
Saline Spot		
Sandy Spot		
Severely Eroded Spot		
Sinkhole		
Slide or Slip		
Sodic Spot		

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lorain County, Ohio
Survey Area Data: Version 20, Sep 8, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 15, 2020—Sep 25, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres In AOI	Percent of AOI
Cz	Udorthents	1.0	2.6%
HsA	Haskins loam, 0 to 2 percent slopes	2.1	5.7%
Ly	Luray silty clay loam, 0 to 2 percent slopes	22.7	61.0%
MgA	Mahoning silt loam, 0 to 2 percent slopes	2.6	6.9%
OtB	Oshtemo sandy loam, 2 to 6 percent slopes	5.0	13.3%
RdA	Rawson loam, 0 to 2 percent slopes	3.9	10.5%
Totals for Area of Interest		37.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

Custom Soil Resource Report

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lorain County, Ohio

Cz—Udorthents

Map Unit Setting

National map unit symbol: 9nf8
Elevation: 160 to 1,970 feet
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 140 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Properties and qualities

Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

HsA—Haskins loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9nfs
Elevation: 600 to 1,300 feet
Mean annual precipitation: 27 to 42 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 130 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Haskins and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haskins

Setting

Landform: Till plains, lake plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Glaciolacustrine deposits over till

Typical profile

H1 - 0 to 13 inches: loam

Custom Soil Resource Report

H2 - 13 to 32 inches: clay loam

H3 - 32 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: D

Ecological site: F139XY002OH - Moist Calcareous Till Flats

Forage suitability group: Unnamed (G139XYC-2OH)

Other vegetative classification: Unnamed (G139XYC-2OH)

Hydric soil rating: No

Minor Components

Fitchville

Percent of map unit: 4 percent

Landform: Terraces, lake plains

Down-slope shape: Concave

Across-slope shape: Linear

Mermill

Percent of map unit: 3 percent

Landform: Depressions

Hydric soil rating: Yes

Jimtown

Percent of map unit: 3 percent

Landform: Terraces

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Linear

Mahoning

Percent of map unit: 3 percent

Landform: Till plains

Areas with a sandy loam, gravelly loam or silt loam surface

Percent of map unit: 1 percent

Areas where the soil has a redder color

Percent of map unit: 1 percent

Ly—Luray silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2v056
Elevation: 590 to 1,970 feet
Mean annual precipitation: 33 to 52 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Luray and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Luray

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Glaciolacustrine deposits

Typical profile

Ap - 0 to 9 inches: silty clay loam
AB - 9 to 13 inches: silty clay loam
Btg - 13 to 38 inches: silty clay loam
BCg - 38 to 41 inches: silty clay loam
Cg - 41 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 9 percent
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F139XY011OH - Wet Calcareous Depression
Hydric soil rating: Yes

Custom Soil Resource Report

Minor Components

Sebring

Percent of map unit: 10 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Fitchville

Percent of map unit: 5 percent
Landform: Lakebeds (relict), terraces
Landform position (three-dimensional): Tread, talf
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

MgA—Mahoning silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2v02z
Elevation: 590 to 1,970 feet
Mean annual precipitation: 33 to 52 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Mahoning and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mahoning

Setting

Landform: Till plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 7 inches: silt loam
Eg - 7 to 9 inches: silt loam
Btg - 9 to 12 inches: silty clay loam
Bt1 - 12 to 20 inches: silty clay
Bt2 - 20 to 30 inches: silty clay
BCt - 30 to 36 inches: clay loam

Custom Soil Resource Report

C - 36 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 6 to 12 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D

Ecological site: F139XY002OH - Moist Calcareous Till Flats

Hydric soil rating: No

Minor Components

Trumbull

Percent of map unit: 5 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Miner

Percent of map unit: 5 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Ellsworth

Percent of map unit: 5 percent

Landform: Till plains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluve, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

OtB—Oshtemo sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9ngy
Elevation: 600 to 1,000 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Oshtemo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oshtemo

Setting

Landform: Terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Outwash

Typical profile

H1 - 0 to 12 inches: sandy loam
H2 - 12 to 30 inches: gravelly sandy loam
H3 - 30 to 62 inches: loamy sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F139XY003OH - Dry Calcareous Till Plains
Hydric soil rating: No

Minor Components

Tyner

Percent of map unit: 3 percent

Landform: Beach plains on lake plains, beach ridges on lake plains

Landform position (two-dimensional): Summit, backslope

Landform position (three-dimensional): Interfluvium, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Chill

Percent of map unit: 3 percent

Landform: Terraces

Haskins

Percent of map unit: 3 percent

Landform: Till plains, lake plains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Linear

Small areas of moderately eroded soils

Percent of map unit: 2 percent

Areas with as much as 70 percent gravel

Percent of map unit: 2 percent

Areas with a loam or fine sandy loam surface

Percent of map unit: 2 percent

RdA—Rawson loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9nh1

Elevation: 780 to 800 feet

Mean annual precipitation: 31 to 42 inches

Mean annual air temperature: 48 to 54 degrees F

Frost-free period: 140 to 208 days

Farmland classification: All areas are prime farmland

Map Unit Composition

Rawson and similar soils: 85 percent

Minor components: 15 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rawson

Setting

Landform: Hills

Landform position (two-dimensional): Summit

Custom Soil Resource Report

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Outwash over till

Typical profile

H1 - 0 to 11 inches: loam

H2 - 11 to 25 inches: sandy loam

H3 - 25 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 25 percent

Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: C

Ecological site: F139XY002OH - Moist Calcareous Till Flats

Hydric soil rating: No

Minor Components

Haskins

Percent of map unit: 5 percent

Landform: Till plains, lake plains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Linear

Areas with a silt loam or sandy loam surface

Percent of map unit: 4 percent

Areas of moderately eroded soils

Percent of map unit: 3 percent

Areas of gravelly soils

Percent of map unit: 3 percent

Area and "C" Values for Storm Sewer Calculations

Area Name (Proposed)	Corresponding CDSS pipe run	Pave/Bldg Area, S.F.	(A*C), Pave/Bldg	Landscaping Area, (S.F.)	(A*C), Landscaping	Total Area, S.F.	Total Area, Ac.	Composite "C"
R1	LAT - CB4	4,393	4,173	0	0	4,393	0.10	0.95
A1	CB4 - CB5	11,664	11,081	5,480	2,740	17,144	0.39	0.81
A2	CB5 - MH1	6,070	5,767	1,290	645	7,360	0.17	0.87
A3	CB1 - CB2	5,783	5,494	667	334	6,450	0.15	0.90
A4	CB2 - CB3	10,959	10,411	4,651	2,326	15,610	0.36	0.82
A5	CB3 - MH1	8,868	8,425	2,769	1,385	11,637	0.27	0.84
OFF1	XCB1 - CB6	6,603	6,273	794	397	7,397	0.17	0.90
OFF2	CB6 - CB4	2,473	2,349	104	52	2,577	0.06	0.93
					Total Area	72,568	1.67	0.85
Pave/Bldg "C" Value			0.95		Grass/Landscaping "C" Value			0.50



STORM SEWER SYSTEM

PID : Date : 07/27/2022 Project : BESC#22-5800

Location : North Ridgeville, Ohio

Description :

Designer : Beres

Rainfall Area: A

Just Full Capacity Frequency (yrs.) : 10

Hydraulic Gradient Frequency (yrs.) : 25

Minimum Pipe Size : 0.00

Tailwater Elevation (ft.): 760.36

JUNCTION		STATION	ΔAREA	ΔCA	BEGIN	RAINFALL			DISCHARGE		PIPE		F/L PIPE	MEAN	JUST FULL	FRICT	HYGR EL.	COVER	COVER	COVER	INLET TYPE	
From	To	From To	Σ AREA (acres)	Σ CA	TIME (min.)	INTENSITY (10 yrs.)	(25 yrs.)	(10 yrs.)	(25 yrs.)	(cfs.)	DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	IN / OUT (ft.)	VEL (fps.)	CAPACITY (cfs.)	SLOPE (ft./ft.)	IN / OUT (ft.)	IN / OUT (ft.)	MINUS HY GR	MINUS CROWN	MANNING'S 'n'
LAT	CB4		0.10 0.10	0.10 0.10	10.00	4.94	5.31	0.5	0.5		8	61.8	0.0100	765.00 764.39	3.43	1.40	0.0015	765.29 765.10	769.00 767.08	3.71	3.33	0.012
XCB1	CB6		0.17 0.27	0.15 0.25	10.00	4.94	5.31	0.8	0.8		12	54.5	0.0394	765.80 763.65	6.23	8.24	0.0004	766.02 765.11	769.59 768.95	3.57	2.79	0.012
CB6	CB4		0.06 0.33	0.06 0.30	10.15	4.91	5.31	1.0	1.1		12	7.6	0.0092	763.65 763.58	4.03	3.98	0.0008	765.11 765.10	768.95 767.08	3.84	4.30	0.012
CB4	CB5		0.39 0.72	0.32 0.62	10.30	4.88	5.31	3.0	3.3		12	240.0	0.0064	763.58 762.06	4.46	3.31	0.0073	765.10 763.36	767.08 765.33	1.98	2.50	0.012
CB5	MH1		0.17 0.89	0.15 0.77	11.20	4.72	5.31	3.6	4.1		12	103.5	0.0075	762.06 761.28	4.61	3.60	0.0111	763.36 762.21	765.33 766.29	1.97	2.28	0.012
CB1	CB2		0.15 1.04	0.14 0.90	10.00	4.94	5.27	0.7	0.7		12	90.2	0.0050	761.22 760.77	2.87	2.94	0.0003	763.09 763.06	768.18 766.50	5.09	5.96	0.012
CB2	CB3		0.36 1.40	0.30 1.20	10.52	4.84	5.27	2.1	2.3		12	176.3	0.0032	760.77 760.21	3.14	2.34	0.0035	763.06 762.45	766.50 765.33	3.44	4.73	0.012
CB3	MH1		0.27 1.67	0.23 1.42	11.46	4.67	5.27	3.1	3.5		12	65.0	0.0066	760.21 759.78	4.56	3.38	0.0080	762.45 761.93	765.33 766.29	2.88	4.12	0.012



STORM SEWER SYSTEM

JUNCTION STATION		ΔAREA	ΔCA	BEGIN	RAINFALL		DISCHARGE		PIPE			F/L PIPE	MEAN	JUST FULL	FRICT	HYGR EL.	COVER	COVER	COVER	INLET TYPE
From	To	Σ AREA	Σ CA	TIME	INTENSITY	(cfs.)	(10 yrs.)	(25 yrs.)	DIAM.	LENGTH	SLOPE	IN / OUT	VEL	CAPACITY	SLOPE	IN / OUT	IN / OUT	MINUS	MINUS	MANNING'S
	From To	(acres)		(min.)					(in.)	(ft.)	(ft./ft.)	(ft.)	(fps.)	(cfs.)	(ft./ft.)	(ft.)	(ft.)	HY GR	CROWN	'n'
MH1	OUT	0.00	0.00	11.70	4.63	5.27	6.6	7.5	12	41.4	0.0273	759.78	9.23	6.86	0.0378	761.93	766.29	4.36	5.51	
		1.67	1.42									758.65				760.36	761.17			0.012

Ohio EPA Storm Water Quality Calculator

Project Name:	Culver's Restaurant Improvements - North Ridgeville
Project Date:	Wednesday, July 27, 2022
Designed By:	Beres

Required Input Information		
Area (A) =	1.67	Acres
Intensity (i) =	1.85	Inches
Runoff Coeff. (C) =	0.85	Unitless

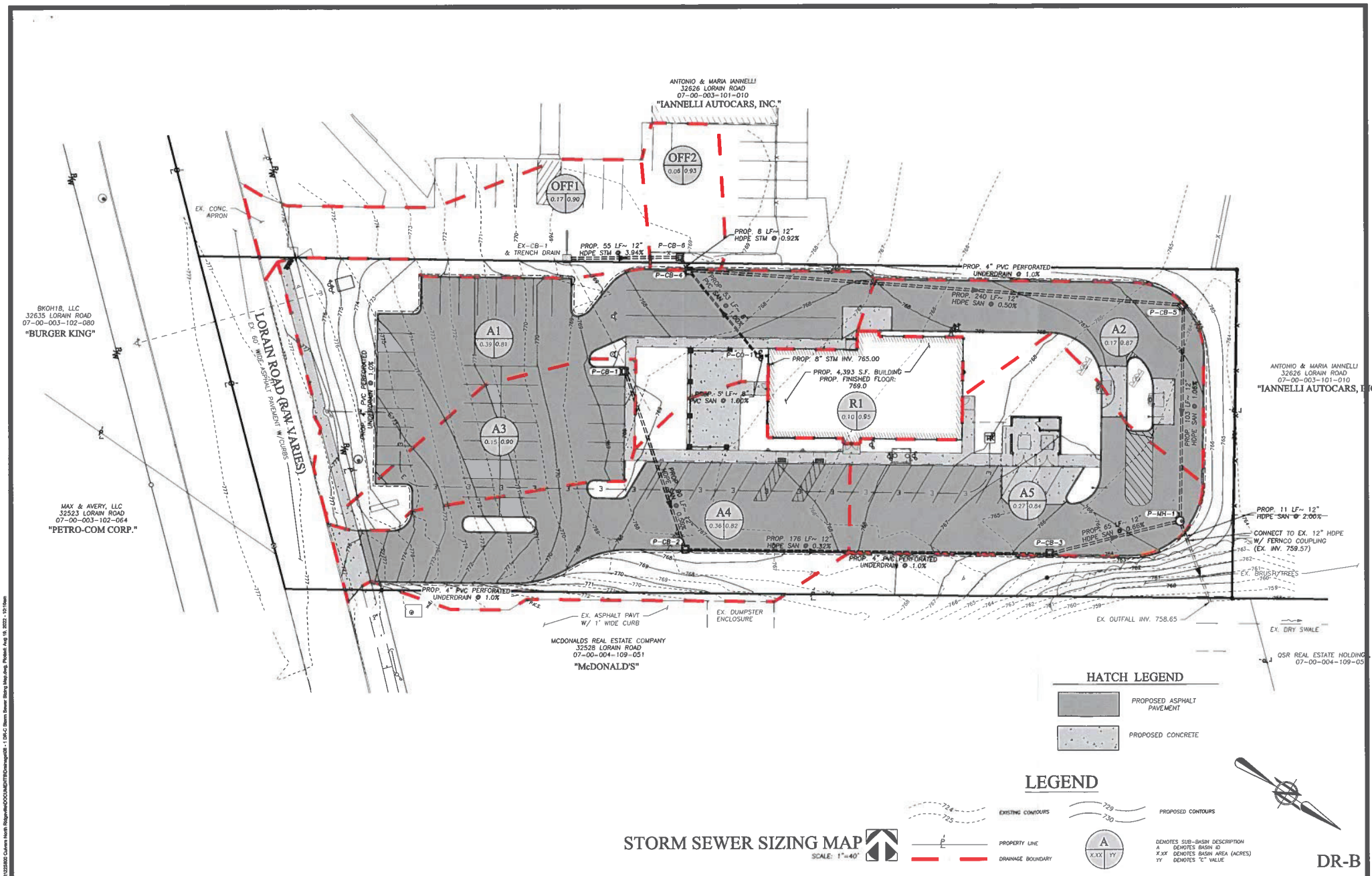
*Refer to Storm Sewer Sizing Drainage Map DR-C

*Refer to Area & "C" values chart

Water Quality Volume (WQ _v)		
WQ _v =	C * i * A	
WQ _v =	2.63	c.f.s.

Intensity determined from Appendix C of NPDES
Permit: OHC000005 with a time of concentration of 10
minutes.

ADS Barraducda S6 reats			Standards
WQ _v =	2.80	c.f.s.	NJDEP (50% removal)



- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SLD REMOVAL SHALL BE BASED ON FULL SCALE THIRD PARTY TESTING USING QO-110 MEDIA GRADATION OR EQUIVALENT AND 300 mg/L INFLUENT CONCENTRATION. SAID FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.
- OR-
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH d/50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION.
- OR-
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS PER CURRENT NJDEP/NJCAT HDS PROTOCOL.

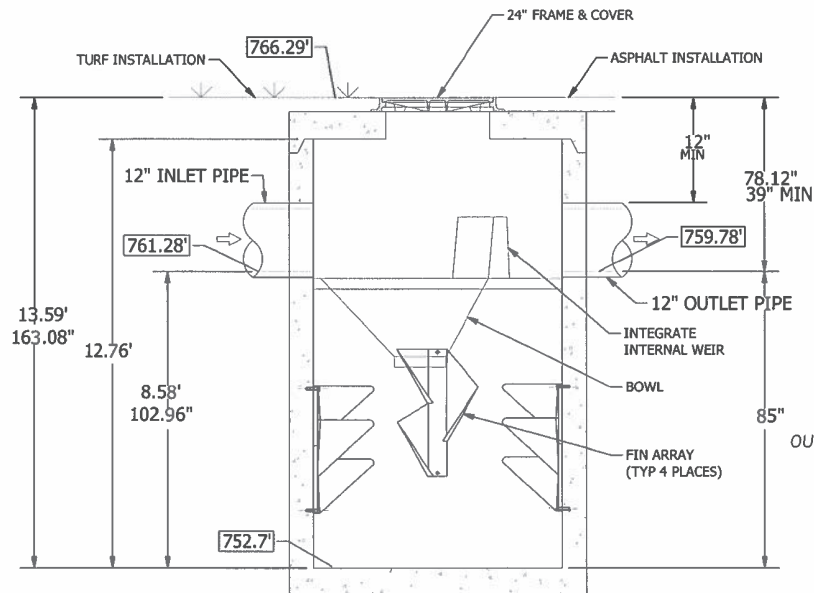
*TREATMENT FLOW RATE PER
NJDEP

CULVER'S
NORTHBRIDGEVILLE, OH

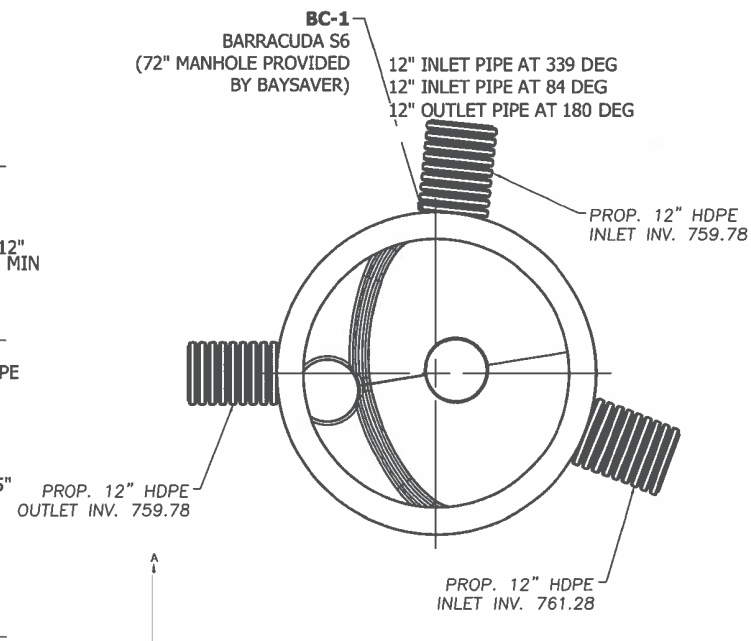
DATE:	DRAWN:
PROJECT #:	CHECKED:

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCTIONS DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

PROJECT #	DATE	REVISION
1-900-229-7283		



SECTION VIEW A-A
SCALE: N.T.S.



SITE SPECIFIC PLAN VIEW
SCALE 1:27

1030 Deer Hollow Drive

1030 Deer Hollow Drive
Mount Airy, MD 21771

Baracuda®

1-800-SAYSAVER

1-800-8A-YSAVER

TRC 4640 TRUEMAN BLVD
LINCOLN, NE 68504

ADS
ADVANCED DRAINAGE SYSTEMS, INC.

4840 TRUEMAN BLVD
HILLIARD, OH 43026

SCALE: AS NOTED

SHEET:
1 OF 1

[illegible]

DRAWN BY:
REB

CHECKED BY:
APA



BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
WATER QUALITY STRUCTURE DETAIL
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C3.2
JOB NO.
22-5800

LEGEND

	CENTERLINE		MANHOLE		IRON PIN/PIPE FOUND
	RIGHT-OF-WAY		EX. CURB INLET/ CATCH BASIN		BENCHMARK SET
	PROPERTY LINE		CLEANOUT		PK NAIL SET
	EASEMENT		YARD DRAIN		SIGN
	EX. PAVEMENT EDGE		FIRE HYDRANT		MAILBOX
	EX. GAS		WATER VALVE		TRANSFORMER BOX
	EX. SANITARY		WATER METER		COMMUNICATIONS BOX
	EX. STORM		EX. WATER VAULT		ELECTRIC BOX
	EX. WATER		SPRINKLER BOX		ELECTRIC METER
	EX. UNDERGROUND ELECTRIC		SPRINKLER HEAD		AIR CONDITION UNIT
	EX. UNDERGROUND TELEPHONE		FIRE DEPT CONNECTION		YARD LIGHT/DECORATIVE LIGHT POLE
	EX. FENCE		WATER SERVICE VALVE		TELEPHONE MANHOLE
	EX. 1FT CONTOUR		GAS METER		LIGHT POLE
	EX. 5FT CONTOUR		GAS VALVE		DECIDUOUS TREE
	EX. BACK OF CURB		GAS MARKER		PINE TREE
	EX. BUILDING		SURVEY CONTROL POINT (3/8" IRON REBAR)		TREE STUMP
	EX. SIDEWALK		ADA RAMP DETECTABLE WARNING		ROCK
	EX. TOP OF BANK/MOUND/RIDGE		PROP. WATER VALVE		LANDSCAPING TO BE REMOVED
	EX. TREE LANDSCAPE		PROP. DOWNSPOUT		(T.B.R.) TO BE REMOVED
	EX. SET BACK		PROP. MANHOLE		(A.T.G.) ADJUST TO GRADE
	PROP. SANITARY		PROP. CURB INLET		(T.B.A.) TO BE ABANDONED
	PROP. STORM		PROP. GREASE TRAP		
	PROP. WATER				
	PROP. PAVEMENT				
	PROP. CONCRETE WALK				
	PROP. MAJOR CONTOUR				
	PROP. MINOR CONTOUR				
	PROP. FENCE				

DESIGN TEAM

DEVELOPER/OWNER
D16 DIRT HOLDINGS, LLC
P.O. BOX RHINELANDER, WI 54501
CONTACT: JOSH CLARK
EMAIL: JOSH@DIRTHOLDINGS.COM

CIVIL SITE ENGINEER & SURVEYOR
BRAMHALL ENGINEERING & SURVEYING COMPANY
801 MOORE ROAD
AVON, OHIO 44011
CONTACT: AARON APPELL, P.E.
EMAIL: AAPPELL@BRAMHALL-ENGINEERING.COM
PHONE: (440) 934-7878

SITE LIGHTING ELECTRICAL ENGINEER
GEDEON, FREDERICK & COMPANY
26031-D CENTER ROAD
WESTLAKE, OH 44145
CONTACT: BOB GEDEON
EMAIL: BOB@GEDEONFREDERICK.COM
PHONE: (440) 892-0490

ARCHITECT
OLLMANN ERNEST MARTIN ARCHITECTS
200 S STATE STREET
BELLEVILLE, IL 61808
CONTACT: WENDY MARTIN, AIA, NCARB
EMAIL: WMARTIN@OEMARCH.COM
PHONE: (815) 544-7790

GEOTECHNICAL ENGINEER
SME
9375 CHILLICOTHE ROAD
YORKTOWN, OH 44094-8501
CONTACT: BRENDAN P. LIESKE, P.E.
EMAIL: BRENDAN.LIESKE@SME-USA.COM
PHONE: (440) 256-6500

LANDSCAPE ARCHITECT
BOULEVARD STUDIOS, LLC
582 VALLEY BROOK LANE
MACEDONIA, OH 44056
CONTACT: CHRIS MESKE, PLA, LEED AP
EMAIL: CHRISMESKE@BOSMAIL.COM
PHONE: (440) 821-7704

UTILITY INFORMATION

STORM, SANITARY, WATER
CITY OF NORTH RIDGEVILLE
30010 BANGOR ROAD
NORTH RIDGEVILLE, OHIO 44039
PHONE: (440) 353-0814
FAX: (440) 353-3257

NATURAL GAS
COLUMBIA GAS
3101 NORTH RIDGE ROAD E
LORAIN, OHIO 44055
ADAM WOODIE
PHONE: (440) 240-6194
JANINE MARSON
PHONE: (440) 752-2649

ELECTRIC
OHIO EDISON
6328 LAKE AVENUE
ELYRIA, OHIO 44035
PHONE: (440) 326-3271

WATER TRANSMISSION
AVON LAKE MUNICIPAL UTILITIES
201 MILLER ROAD
AVON LAKE, OH 44012
PHONE: (440) 933-6226

CABLE
SPECTRUM/CHARTER
576 TERNES AVENUE
LORAIN, OHIO 44052
DAVID SOBOTKA
PHONE: (216) 575-8016

TELEPHONE
CENTURYLINK/LUMEN
253 WEST 9TH STREET
LORAIN, OHIO 44052
GERONIMO SALES
PHONE: (440) 244-8330
AT&T
13630 LORAIN AVE, FLOOR 2
CLEVELAND, OHIO 44111
JAMIE POVENTUD
PHONE: (216) 476-6045
EMAIL: JP5359@ATT.COM

WINDSTREAM
32800 CENTER RIDGE ROAD
NORTH RIDGEVILLE, OH 44039
PHONE: (440) 353-2698
EMAIL: LOCATE.DESK@WINDSTREAM.COM

EXISTING UNDERGROUND UTILITIES NOTE:

THE SIZE & LOCATION, BOTH HORIZONTAL AND VERTICAL, OF THE UNDERGROUND UTILITIES SHOWN HEREON, HAVE BEEN OBTAINED BY A SEARCH OF AVAILABLE RECORDS, VERIFICATION BY FIELD OBSERVATION HAS BEEN CONDUCTED WHERE PRACTICAL. HOWEVER, BRAMHALL ENGINEERING AND SURVEYING COMPANY DOES NOT GUARANTEE THE COMPLETENESS NOR ACCURACY THEREOF.

OHIO UTILITIES PROTECTION SERVICE	UNDERGROUND UTILITIES	OHIO OIL & GAS PRODUCERS
800-368-2784 OR 8-1-1 (TOLL FREE) ONE CALL REQUIRED AS REQUIRED BY NO MORE THAN 48 HOURS ADVANCE NOTICE FOR INFORMATION ON RECORDS, CALL 1-800-368-2784 FOR INFORMATION ON RECORDS, CALL 1-800-368-2784	800-368-2784 OR 8-1-1 (TOLL FREE) ONE CALL REQUIRED AS REQUIRED BY NO MORE THAN 48 HOURS ADVANCE NOTICE FOR INFORMATION ON RECORDS, CALL 1-800-368-2784 FOR INFORMATION ON RECORDS, CALL 1-800-368-2784	800-368-2784 OR 8-1-1 (TOLL FREE) ONE CALL REQUIRED AS REQUIRED BY NO MORE THAN 48 HOURS ADVANCE NOTICE FOR INFORMATION ON RECORDS, CALL 1-800-368-2784 FOR INFORMATION ON RECORDS, CALL 1-800-368-2784

DATE	BY	DESCRIPTION
8-20-2021	APA	ISSUE TO CLIENT FOR REVIEW
8-20-2021	APA	ISSUE TO CITY FOR REVIEW

DRAWN BY:
REB

CHECKED BY:
APA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED BY:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CONSTRUCTION PLANS FOR CULVER'S RESTAURANT IMPROVEMENTS

32574 LORAIN ROAD
CITY OF NORTH RIDGEVILLE,
COUNTY OF LORAIN,
STATE OF OHIO



LOCATION MAP
NOT TO SCALE

INDEX OF SHEETS

TITLE SHEET	T1.0
EXISTING CONDITIONS & DEMOLITION PLAN	C1.0
SITE PLAN	C2.0
FIRE TRUCK EXHIBIT	C2.1
UTILITY PLAN	C3.0
SANITARY LATERAL PROFILE	C3.1
WATER QUALITY STRUCTURE DETAIL	C3.2
GRADING PLAN	C4.0
SWPP PLAN	C5.0
SWPPP NOTES & DETAILS	C5.1-C5.5
MISCELLANEOUS DETAILS	C6.0-C6.6
LANDSCAPE PLANS	L1.0-L1.2
PHOTOMETRIC PLAN	SL1.0

APPROVAL ON BEHALF OF THE CITY OF NORTH RIDGEVILLE

DANIEL RODRIGUEZ, P.E.
CITY ENGINEER

PLANS PREPARED BY

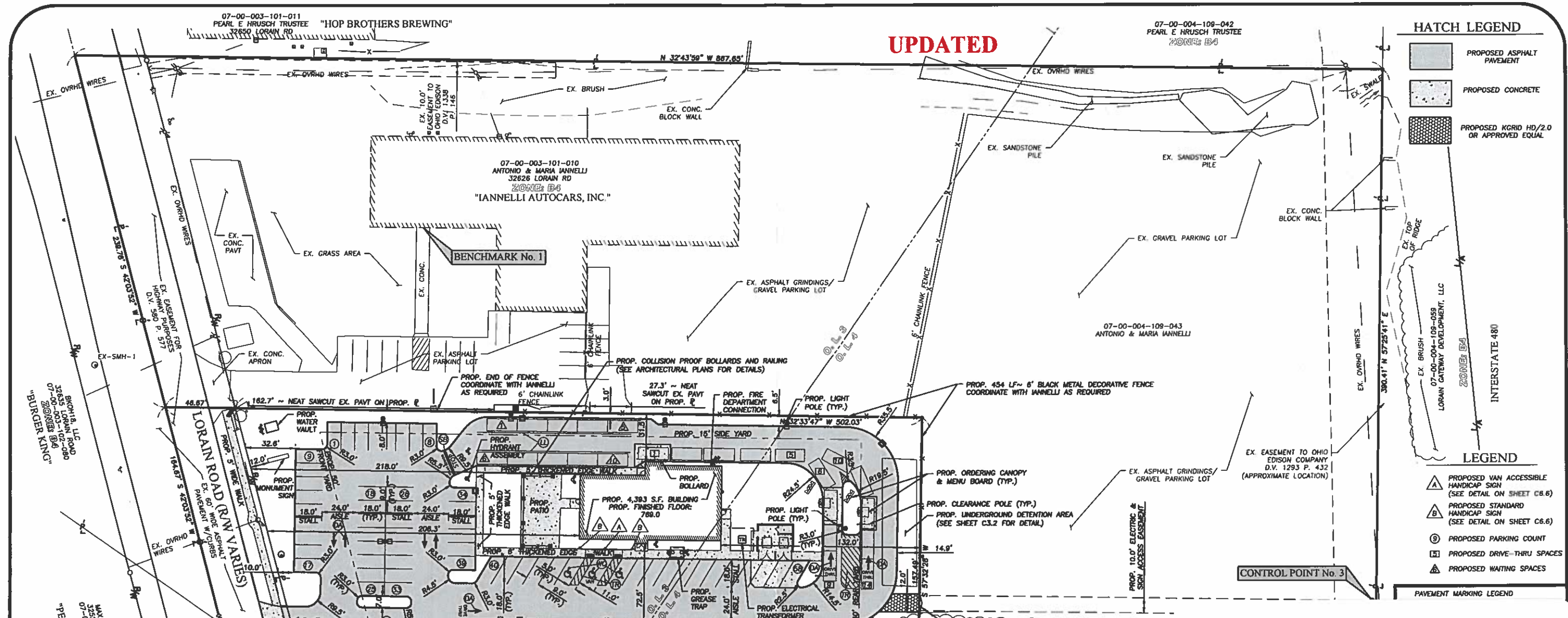
AARON P. APPELL, P.E.
REGISTERED OHIO ENGINEER NO. E-75683



8/19/2022
DATE

CULVER'S RESTAURANT IMPROVEMENTS
TITLE SHEET
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
T1.0
JOB NO.
22-5800



UPDATED

HATCH LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE
- PROPOSED GRAVEL HD/2.0 OR APPROVED EQUAL

LEGEND

- PROPOSED VAN ACCESSIBLE HANDICAP SIGN (SEE DETAIL ON SHEET C6.6)
- PROPOSED STANDARD HANDICAP SIGN (SEE DETAIL ON SHEET C6.6)
- PROPOSED PARKING COUNT
- PROPOSED DRIVE-THRU SPACES
- PROPOSED WAITING SPACES

PAVEMENT MARKING LEGEND

CITY OF NORTH RIDGEVILLE
PLANNING COMMISSION

Approval Granted	Request Rejected
Refer For Council Approval: <i>Development Plan & Lot Split</i>	
BZBA Approval Required:	
Other Conditions: <i>excluding the sign package</i>	
DATE: <i>7-27-2017</i>	BY: <i>[Signature]</i>

NOTES:

- ALL DIMENSIONS ARE TAKEN FROM THE EDGE OF WALK, BACK OF CURB, FACE OF BUILDING UNLESS OTHERWISE STATED.
- ALL PAVEMENT AND SITE WORK SHALL CONFORM TO O.D.O.T., AND CITY OF NORTH RIDGEVILLE STANDARD CONSTRUCTION DRAWINGS.
- ALL EARTHWORK, SUBGRADE PREPARATION, & BACKFILL REQUIREMENTS SHALL BE MONITORED BY A CERTIFIED GEOTECHNICAL ENGINEER.
- CONTRACTOR MUST SECURE ALL NECESSARY PERMITS PRIOR TO STARTING WORK.
- IF THE CONTRACTOR, IN THE COURSE OF THE WORK, FINDS ANY DISCREPANCIES BETWEEN THE PLANS AND THE PHYSICAL CONDITIONS OF THE SITE, OR ANY ERRORS OR OMISSIONS IN THE PLANS OR IN THE LAYOUT AS GIVEN BY THE ENGINEER, IT SHALL BE HIS DUTY TO IMMEDIATELY INFORM THE ENGINEER, IN WRITING, AND THE ENGINEER WILL PROMPTLY VERIFY THE SAME. ANY WORK DONE AFTER SUCH A DISCOVERY, UNTIL AUTHORIZED, WILL BE AT THE CONTRACTOR'S RISK.
- ALL CONSTRUCTION MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE TO THE STATE AND LOCAL GOVERNMENT AGENCY LATEST CONSTRUCTION SPECIFICATIONS AND DETAILS.
- CONTRACTOR SHALL BE RESPONSIBLE FOR VERIFICATION OF ALL SETBACKS, EASEMENTS, AND DIMENSIONS SHOWN HEREON PRIOR TO CONSTRUCTION.
- CONTRACTOR TO NOTIFY THE CITY OF NORTH RIDGEVILLE AND SITE OWNER A MINIMUM OF SEVENTY TWO (72) HOURS BEFORE BEGINNING CONSTRUCTION.
- THE CONTR WORKERS / PROPERTY
- CONTRACTOR AND/OR OPERATION:
- ALL STREET DITCHES AT MANNER AS ACCORDANCE
- ALL ADA S LOCAL COD
- CONTRACTO SEE ARCHT
- CONTRACTO REGARDING
- KNOX BOX FINAL CON
- CONTRACTO FENCE AS R

ZONING CLASSIFICATION

THE SUBJECT PREMISES IS LOCATED WITHIN ZONE B4 COMMERCIAL PARKWAY DISTRICT (CHAPTER 1270) AS SHOWN ON THE ZONING MAP OF THE CITY OF NORTH RIDGEVILLE.

- YARD SPACING, SIZE AND HEIGHT REQUIREMENTS (1270.03-1270.05)**
- | | |
|--------------------------------------|---------|
| MINIMUM BUILDING HEIGHT | 65 FEET |
| (1) MINIMUM FRONT YARD | 50 FEET |
| A. MINIMUM UNOBSTRUCTED BUFFER STRIP | 10 FEET |
| (2) MINIMUM REAR YARD | 40 FEET |
| (3) MAXIMUM SIDE YARD | 15 FEET |
| A. THE SUM OF BOTH SIDE YARDS | 35 FEET |
| MINIMUM BUILDING COVERAGE OF LOT | 25% |
- PARKING SPACE REQUIREMENTS (1284.02)**
- RESTAURANTS - FAST FOOD W/ DRIVE-UP WINDOW
- ONE SPACE FOR EVERY 100 S.F. OF FLOOR AREA, PLUS ONE SPACE FOR EVERY FOUR EMPLOYEES

TOTAL FOOTPRINT (1 STORY BUILDING) 3,568 S.F.
GROSS FLOOR AREA: 4,393 S.F.
NUMBER OF EMPLOYEES: 30

REQUIRED PARKING SPACES: $(4,393/100) + (30/4) = 52$

PROPOSED PARKING SPACES: 58 (3 ADA SPACES INCLUDED)
PROPOSED DRIVE-THRU SPACES: 14
PROPOSED WAITING SPACES: 10

TOTAL PARKING SPACES: 58
ALL PARKING SPACES ARE 9' x 18' UNLESS NOTED OTHERWISE.

BENCHMARK:

BENCHMARK No. 1:
FINISHED FLOOR ELEVATION
OF IANNELLI AUTOCARS
ELEV.: 769.24

CONTROL POINTS:

CONTROL POINT No. 1:
MAGNAIL SET IN CONCRETE
N: 626315.35
E: 2111845.67

CONTROL POINT No. 2:
REBAR SET IN GRASS
N: 626519.55
E: 2111499.18

CONTROL POINT No. 3:
REBAR SET IN GRAVEL
N: 626830.39
E: 2111262.52

PROJECT DATUM

REFERENCE DATUM: STATE
PLANE OHIO NORTH 3401
HORIZONTAL DATUM: NAD83
VERTICAL DATUM: NAVD88

OHIO UTILITIES PROTECTION SERVICE	UNDERGROUND UTILITIES
BEFORE YOU DIG ANYWHERE IN OHIO CALL 1-800-342-2784 OR 8-1-1 (TOLL FREE) OHIO LAW REQUIRES 48 HOURS BUT NO MORE THAN 10 WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, OR ANY OTHER DISTURBANCE (YOUR NUMBER MUST BE CALLED DIRECTLY) WWW.COPS.ORG	Consult Two Working Days Before You Dig OHIOSHIELD Before You Dig OHIOSHIELD, 8-1-1, or 1-800-342-2784 (Two numbers must be called directly)

DATE	BY	DESCRIPTION
8-18-2017	APA	ISSUE TO CITY FOR REVIEW
8-21-2017	APA	ISSUE TO SPENCERFIELD SKY
8-29-2017	APA	REVISUE TO CITY FOR REVIEW

DRAWN BY: RER

CHECKED BY: APA

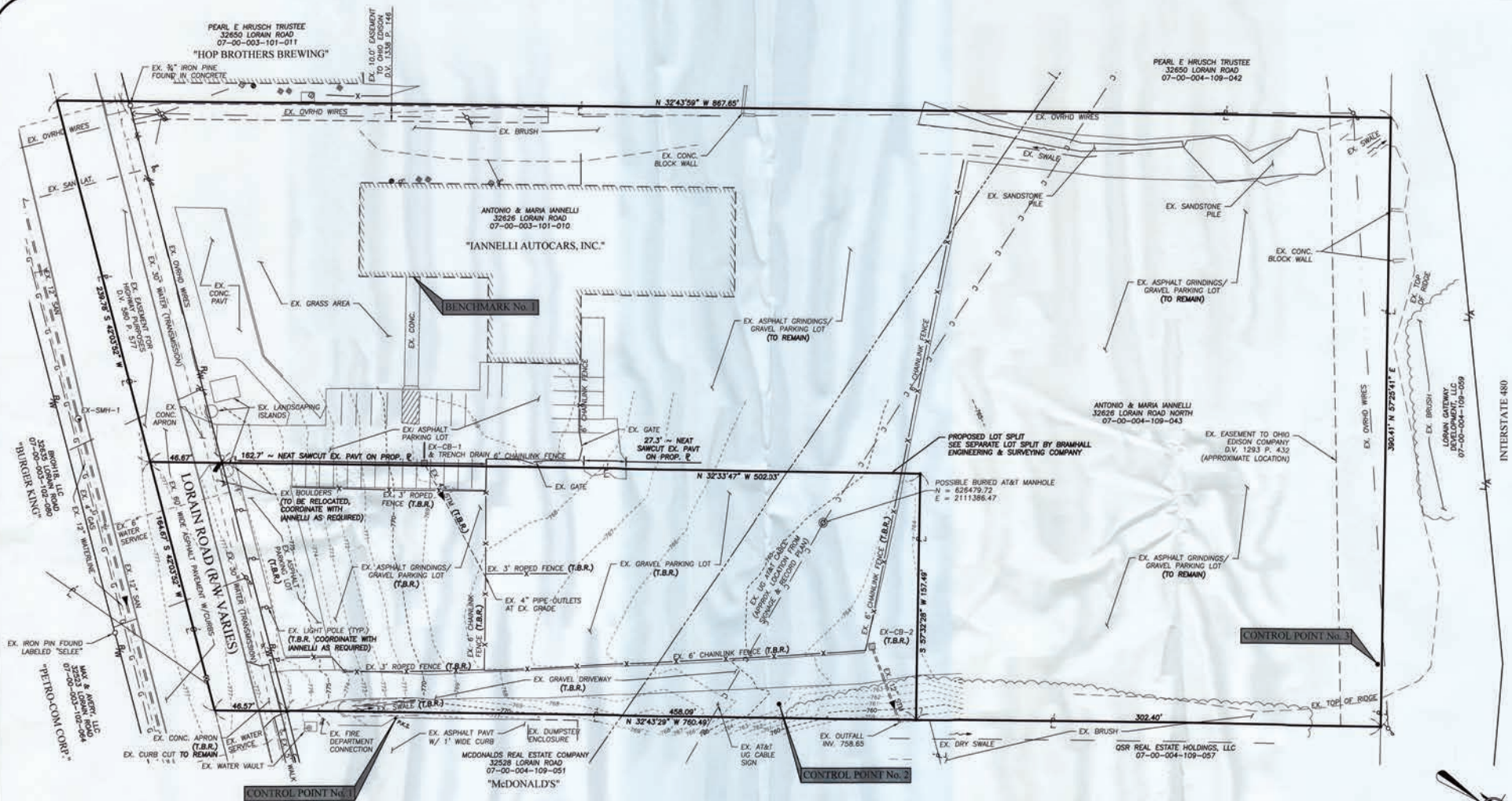
BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
SITE PLAN
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET C2.0
JOB NO. 22-5800



EXISTING UNDERGROUND UTILITIES NOTE:
THE SIZE & LOCATION, BOTH HORIZONTAL AND VERTICAL, OF THE UNDERGROUND UTILITIES SHOWN HEREON, HAVE BEEN OBTAINED BY A SEARCH OF AVAILABLE RECORDS. VERIFICATION BY FIELD OBSERVATION HAS BEEN CONDUCTED WHERE PRACTICAL. HOWEVER, BRAMHALL ENGINEERING AND SURVEYING COMPANY, DOES NOT GUARANTEE THE COMPLETENESS NOR ACCURACY THEREOF.

OHIO UTILITIES PROTECTION SERVICE
BEFORE YOU BEGIN ANY WORK, CALL 1-800-362-8764 OR 81-1-1 (TOLL FREE)
OHIO 811.org
When You Dig, You Dig Right

EXISTING SANITARY STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
EX-SMH-1	776.10	12" RCP (NE) INV.: 751.90 12" RCP (SW) INV.: 751.90	N: 628037.89 E: 2111598.01

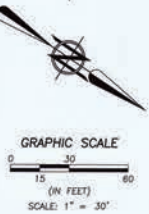
EXISTING STORM STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
EX-CB-1	769.59	4" PVC (SW) INV.: 768.21+ 4" PVC (NE) INV.: 767.72+ (T.B.R.)	N: 626241.27 E: 2111498.74
EX-CB-2	762.95	12" HDPE (NE) INV.: 760.20	N: 626549.03 E: 2111434.78

BENCHMARK:
BENCHMARK No. 1:
FINISHED FLOOR ELEVATION
OF IANNELLI AUTOCARS
ELEV.: 769.24

CONTROL POINTS:
CONTROL POINT No. 1:
MAGNET SET IN CONCRETE
N: 626515.35
E: 2111645.67
CONTROL POINT No. 2:
REBAR SET IN GRASS
N: 626519.50
E: 2111499.18
CONTROL POINT No. 3:
REBAR SET IN GRAVEL
N: 626530.39
E: 2111262.52

PROJECT DATUM
REFERENCE DATUM: STATE
PLANE: OHIO NORTH 3401
HORIZONTAL DATUM: NAD83
VERTICAL DATUM: NAVD83

SURVEY NOTE:
A BOUNDARY SURVEY PURSUANT TO CHAPTER
4733-37 OF THE OHIO ADMINISTRATIVE CODE
HAS BEEN PERFORMED BY BRAMHALL
ENGINEERING & SURVEYING COMPANY.



DRAWN BY:
RFB
CHECKED BY:
APA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:
216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

**CULVER'S RESTAURANT IMPROVEMENTS
EXISTING CONDITIONS & DEMOLITION PLAN**
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

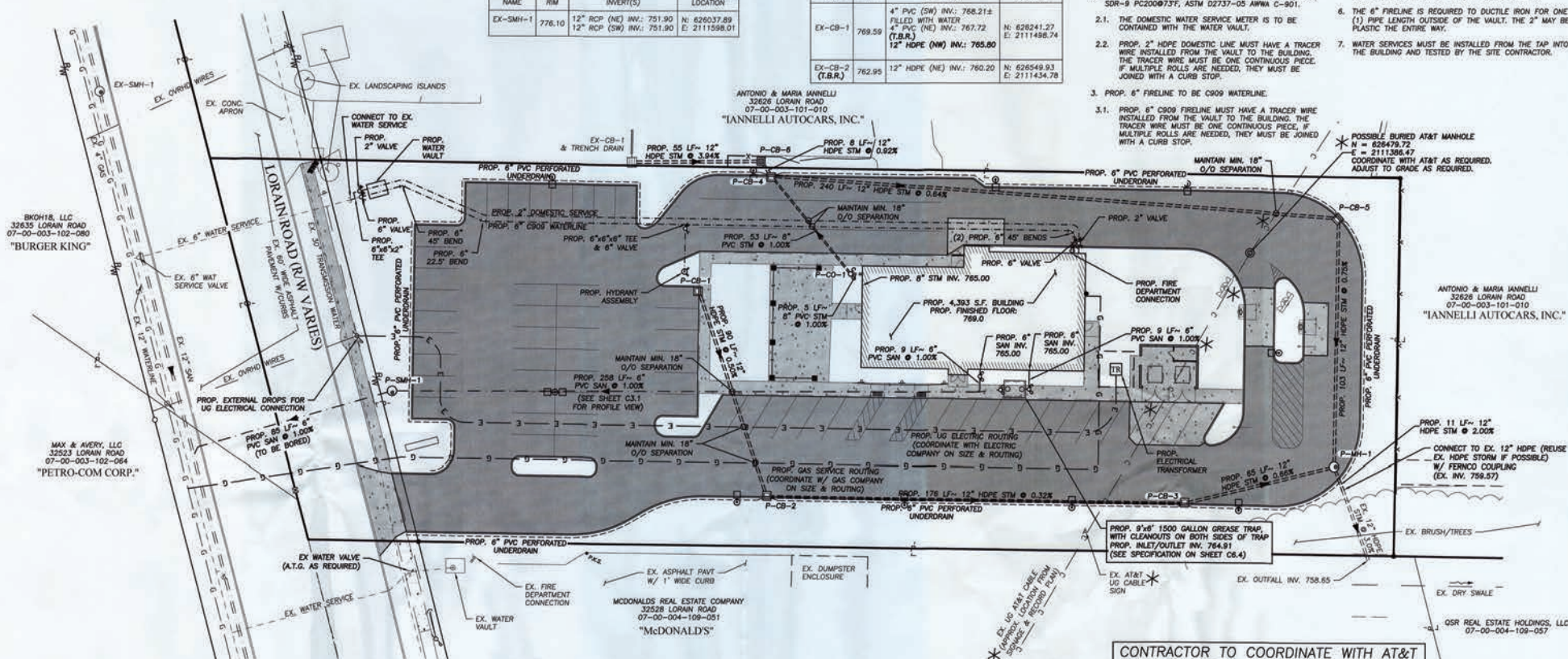
SHEET
C1.0
JOB NO.
22-5800

EXISTING SANITARY STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
EX-SMH-1	776.10	12" RCP (NE) INV: 751.90 12" RCP (SW) INV: 751.90	N: 626037.89 E: 2111598.01

EXISTING STORM STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
EX-CB-1	769.59	4" PVC (SW) INV: 768.21± 4" PVC (NE) INV: 767.72 (I.B.R.) 12" HDPE (NW) INV: 765.60	N: 626241.27 E: 2111488.74
EX-CB-2	762.95	12" HDPE (NE) INV: 760.20	N: 626549.93 E: 2111434.78

UTILITY NOTES:

1. MAINTAIN A MINIMUM 18" VERTICAL SEPARATION AT ALL UTILITY CROSSINGS, OUTER DIAMETER TO OUTER DIAMETER (O/O).
2. PROP. 2" DOMESTIC SERVICE TO BE HOPE PCS406, C-3, SDR-9 PC2008737, ASTM D2737-05 AWWA C-901.
- 2.1. THE DOMESTIC WATER SERVICE METER IS TO BE CONTAINED WITH THE WATER VAULT.
- 2.2. PROP. 2" HOPE DOMESTIC LINE MUST HAVE A TRACER WIRE INSTALLED FROM THE VAULT TO THE BUILDING. THE TRACER WIRE MUST BE ONE CONTINUOUS PIECE. IF MULTIPLE ROLLS ARE NEEDED, THEY MUST BE JOINED WITH A CURB STOP.
3. PROP. 6" FIRELINE TO BE C909 WATERLINE.
- 3.1. PROP. 6" C909 FIRELINE MUST HAVE A TRACER WIRE INSTALLED FROM THE VAULT TO THE BUILDING. THE TRACER WIRE MUST BE ONE CONTINUOUS PIECE. IF MULTIPLE ROLLS ARE NEEDED, THEY MUST BE JOINED WITH A CURB STOP.
4. WATER LINES SHALL HAVE JOINT RESTRAINTS 2 JOINTS BEFORE AND AFTER ANY FITTINGS.
5. THE 6" FIRELINE BETWEEN TSH BUILDING AND THE NEAREST VALVE MUST BE DUCTILE IRON CLASS 52.
6. THE 6" FIRELINE IS REQUIRED TO DUCTILE IRON FOR ONE (1) PIPE LENGTH OUTSIDE OF THE VAULT. THE 2" MAY BE PLASTIC THE ENTIRE WAY.
7. WATER SERVICES MUST BE INSTALLED FROM THE TAP INTO THE BUILDING AND TESTED BY THE SITE CONTRACTOR.



PROPOSED SANITARY STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
P-SMH-1	775.60	6" PVC (SE) INV: 762.22 6" PVC (NW) INV: 762.32	N: 626209.75 E: 2111634.48

PROPOSED STORM STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
P-CB-1	768.18	12" HDPE (NE) INV: 761.22	N: 626294.89 E: 2111528.35
P-CB-2	766.50	12" HDPE (NW) INV: 760.77 12" HDPE (SW) INV: 760.77 6" PVC (SE) INV: 763.50 6" PVC (NW) INV: 763.50	N: 626365.72 E: 2111594.00
P-CB-3	765.33	12" HDPE (SE) INV: 760.21 12" HDPE (NW) INV: 760.21 6" PVC (SE) INV: 762.33 6" PVC (NW) INV: 762.33	N: 626514.34 E: 2111489.09
P-CB-4	767.08	6" PVC (S) INV: 764.08 12" HDPE (NW) INV: 763.58 6" PVC (NW) INV: 764.08 12" HDPE (S) INV: 763.58	N: 626293.80 E: 2111471.07

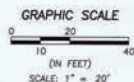
PROPOSED STORM STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
P-CB-5	765.33	12" HDPE (SE) INV: 762.06 12" HDPE (NE) INV: 762.06 6" PVC (SW) INV: 762.33 6" PVC (NW) INV: 762.33	N: 626502.83 E: 2111353.79
P-CB-6	768.95	12" HDPE (SE) INV: 763.65 12" HDPE (NW) INV: 763.65	N: 626286.52 E: 2111468.28
P-CB-7	768.75	6" PVC (S) INV: 764.95 6" PVC (NW) INV: 764.95	N: 626344.06 E: 2111488.69
P-MH-1	766.29	12" HDPE (SW) INV: 761.28 12" HDPE (SE) INV: 759.78 12" HDPE (NE) INV: 759.78	N: 626558.26 E: 2111441.19

CONTRACTOR TO COORDINATE WITH AT&T
* TO VERIFY NO CONFLICTS WITH
PROPOSED DUMPSTER FOUNDATION,
MENU BOARD AND STORM CROSSINGS.

HATCH LEGEND



EXISTING UNDERGROUND UTILITIES NOTE:
THE SIZE & LOCATION, BOTH HORIZONTAL AND VERTICAL, OF THE UNDERGROUND UTILITIES SHOWN HEREON, HAVE BEEN OBTAINED BY A SEARCH OF AVAILABLE RECORDS, VERIFICATION BY FIELD OBSERVATION AND/OR BY INTERVIEWING THE RECORDS COMPANY. HOWEVER, THE COMPLETENESS, ACCURACY, AND DATE OF THE RECORDS ARE NOT GUARANTEED BY THE ENGINEER.



STRUCTURE TYPES:

1. 2'x3' CURB INLET
2. ADS BARRICAUDA WATER QUALITY STRUCTURE OR APPROVED EQUAL
3. STORM CLEANOUT
4. SANITARY MONITORING MANHOLE
5. 0007 2-20 CATCH BASIN W/ 1/2" 5250 FRAME & GRATE

OHIO UTILITIES PROTECTION SERVICE

BEFORE YOU DO ANYTHING IN OHIO
CALL 1-800-362-5746 OR 811-1111 (TOLL FREE)
OHIO HAS A 24-HOUR SERVICE CENTER TO ASSIST YOU WITH YOUR 811 CALLS.
IF YOU HAVE A SERVICE REQUEST, CALL 1-800-362-5746 OR 811-1111 (TOLL FREE).
OHIO HAS A 24-HOUR SERVICE CENTER TO ASSIST YOU WITH YOUR 811 CALLS.

UNDERGROUND UTILITIES

CALL 811 TO REPORT A PROBLEM

OHIO811.org

Before You Dig

DRAWN BY:
RFB

CHECKED BY:
APA

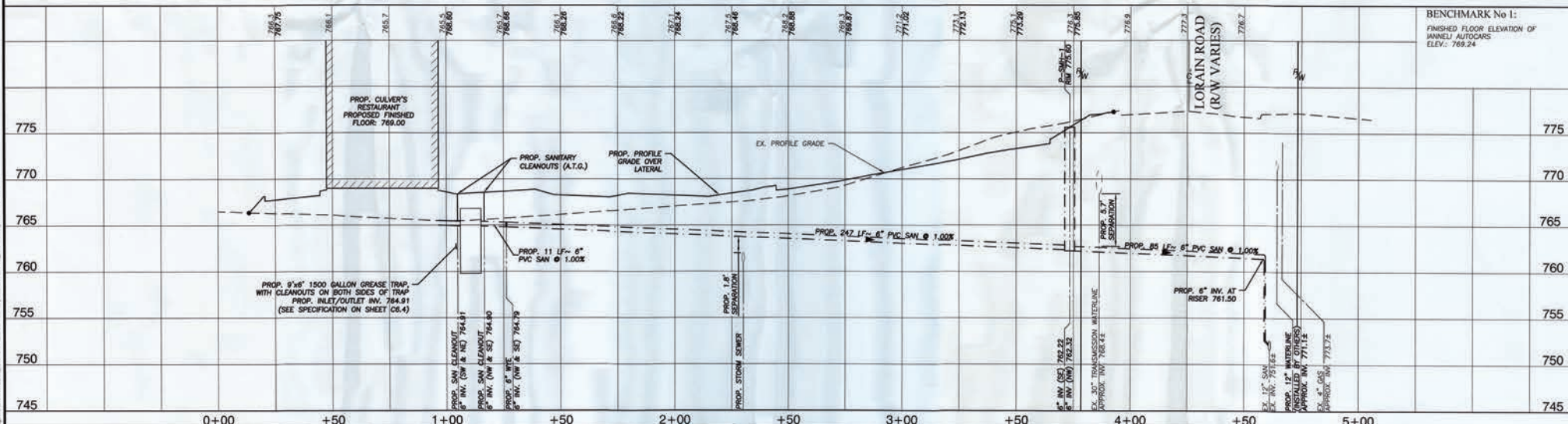
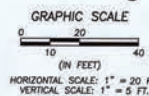
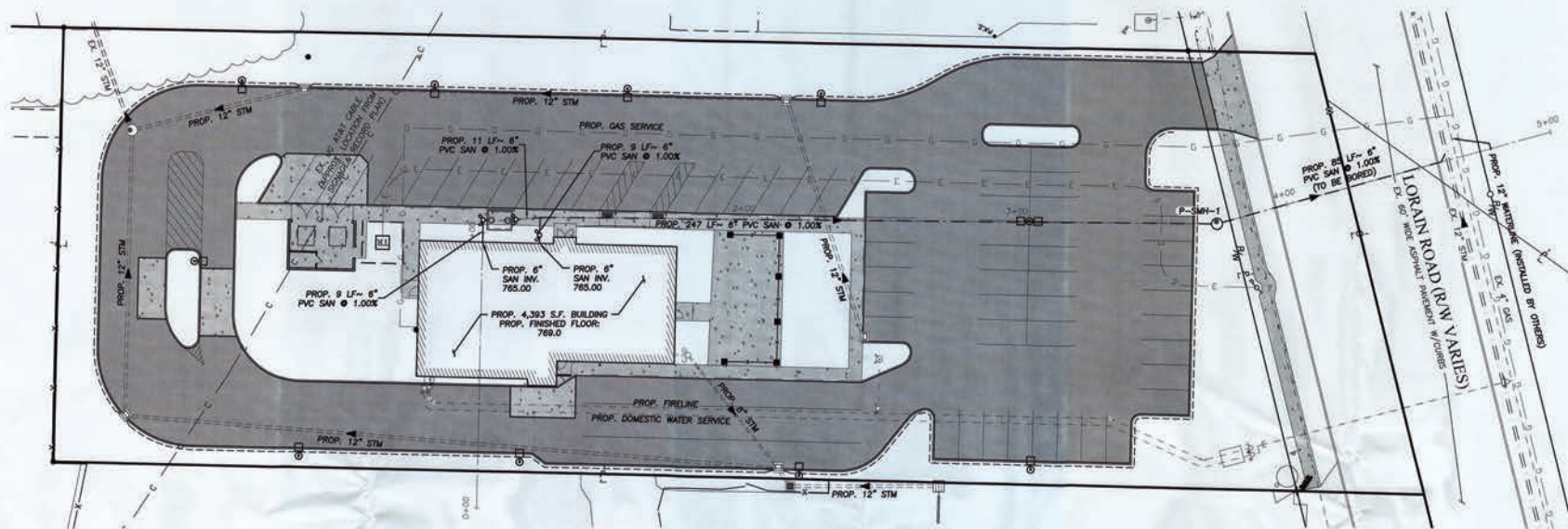
BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
UTILITY PLAN
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C3.0
JOB NO.
22-5800



BENCHMARK No 1:
FINISHED FLOOR ELEVATION OF
HANELI AUTOCARS
ELEV.: 769.24

DATE	BY	DESCRIPTION
8-4-2012	APA	ISSUE FOR REVIEW
8-10-2012	APA	ISSUE TO CITY FOR REVIEW

DRAWN BY:
REF

CHECKED BY:
APA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:
216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

**CULVER'S RESTAURANT IMPROVEMENTS
SANITARY LATERAL PROFILE**
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C3.1
JOB NO.
22-5800

PRODUCT SPECIFICATIONS

- THE STORMWATER TREATMENT UNIT SHALL BE AN INLINE UNIT CAPABLE OF CONVEYING 100% OF THE DESIGN PEAK FLOW. IF PEAK FLOW RATES EXCEED MAXIMUM HYDRAULIC RATE, THE UNIT SHALL BE INSTALLED OFFLINE.
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 80% OF THE SUSPENDED SOLIDS ON AN ANNUAL AGGREGATE REMOVAL BASIS. SAID REMOVAL SHALL BE BASED ON FULL-SCALE THIRD PARTY TESTING USING OK-110 MEDIA GRADATION OR EQUIVALENT AND 300 mg/L INFLUENT CONCENTRATION. SAID FULL SCALE TESTING SHALL HAVE INCLUDED SEDIMENT CAPTURE BASED ON ACTUAL TOTAL MASS COLLECTED BY THE STORMWATER TREATMENT UNIT.
- OR-
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS USING A MEDIA MIX WITH d50=75 MICRON AND 200 MG/L INFLUENT CONCENTRATION.
- OR-
- THE BARRACUDA UNIT SHALL BE DESIGNED TO REMOVE AT LEAST 50% OF TSS PER CURRENT NJDEP/NJCAT HDS PROTOCOL.

BARRACUDA S6	
UNIT ID	S6
PEAK FLOW RATE CFS	6.4
TREATMENT FLOW RATE CFS	2.24

*TREATMENT FLOW RATE PER NJDEP

CULVER'S NORTH RIDGEVILLE, OH	DRAWN:	CHECKED:
DATE:	PROJECT #:	

THIS DRAWING HAS BEEN PREPARED BASED ON INFORMATION PROVIDED TO ADS UNDER THE DIRECTION OF THE SITE DESIGN ENGINEER OR OTHER PROJECT REPRESENTATIVE. THE SITE DESIGN ENGINEER SHALL REVIEW THIS DRAWING PRIOR TO CONSTRUCTION. IT IS THE ULTIMATE RESPONSIBILITY OF THE SITE DESIGN ENGINEER TO ENSURE THAT THE PRODUCTS DEPICTED AND ALL ASSOCIATED DETAILS MEET ALL APPLICABLE LAWS, REGULATIONS, AND PROJECT REQUIREMENTS.

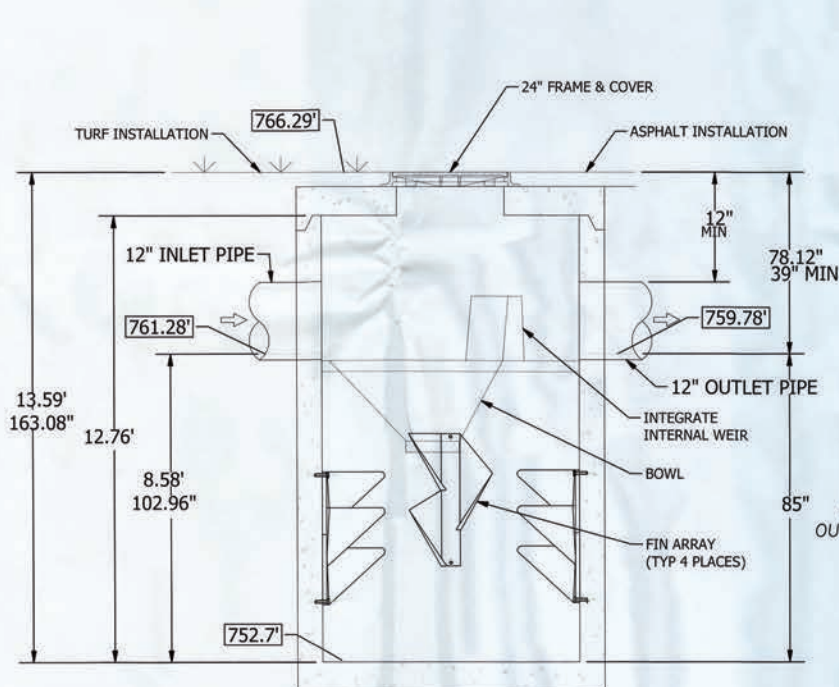
1030 Deer Hollow Drive
Mount Airy, MD 21771

1-800-BAYSAVER

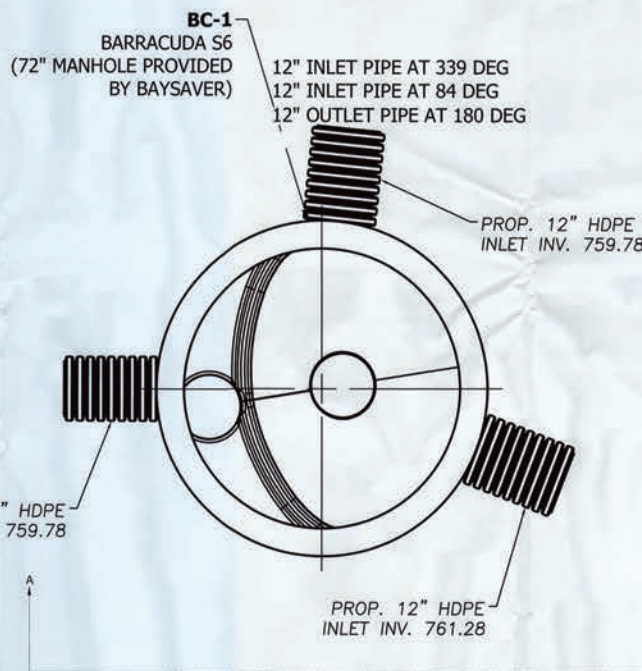
4640 TRUHEMAN BLVD
HILLIARD, OH 43026
ADS
ADVANCED DRAINAGE SYSTEMS, INC.

SCALE: AS NOTED

SHEET: 1 OF 1



SECTION VIEW A-A
SCALE: N.T.S.



SITE SPECIFIC PLAN VIEW
SCALE 1:27

DATE	BY	DESCRIPTION
8-19-2021	APA	ISSUE TO CITY FOR REVIEW

DRAWN BY: REB
CHECKED BY: APA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:
216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
WATER QUALITY STRUCTURE DETAIL
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C3.2
JOB NO.
22-5800

BRONKH, LLC
32635 LORAIN ROAD
07-00-003-102-080
"BURGER KING"

MAX & AVERY, LLC
32523 LORAIN ROAD
07-00-003-102-064
"PETRO-COM CORP."

SITE LOCATION INFORMATION

CITY OF NORTH RIDGEVILLE LORAIN COUNTY, OHIO
NAME OF WATERSHED/SUBSEQUENT RECEIVING WATER(S)
IMMEDIATE RECEIVING WATER: EXISTING DRY SWALE
SUBSEQUENT RECEIVING WATER: MILLS CREEK
SITE ADDRESS
EAST OF JANNELLI AUTOCARS, INC.
(32636 LORAIN ROAD NORTH RIDGEVILLE, OHIO 44039)

OWNER:
216 DIRT HOLDINGS, LLC
JOSH CLARK
P.O. BOX 591
RHINELANDER, WI 54501

SITE / OPERATOR CONTACT INFORMATION:

COMPANY: 216 DIRT HOLDINGS, LLC
CONTACT: JOSH CLARK
PHONE: (715) 499-2181

OHIO UTILITIES PROTECTION SERVICE	
BEFORE YOU DIG ANYWHERE IN OHIO CALL 1-800-393-2764 OR 8-1-1 (TOLL FREE) UNSAFE UTILITIES ARE A DANGER TO YOU AND YOUR PROPERTY. IF YOU ARE NOT SURE OF THE LOCATION OF ANY UTILITIES, CALL 800-393-2764 OR 8-1-1 (TOLL FREE). IF YOU ARE SURE OF THE LOCATION OF ANY UTILITIES, CALL 800-393-2764 OR 8-1-1 (TOLL FREE). IF YOU ARE SURE OF THE LOCATION OF ANY UTILITIES, CALL 800-393-2764 OR 8-1-1 (TOLL FREE).	UNDERGROUND UTILITIES Contact Your Working Party Before You Dig
OHIO811.org 811	OHIO811.org 811

SWPPP AUTHORIZATION AGENT CONTACT INFORMATION:

AARON P. APPELL, P.E. CPESC
BRAMHALL ENGINEERING AND
SURVEYING COMPANY
801 MOORE ROAD
AVON, OHIO 44011
(440) 934-7878



SWPPP NOTES:

- THE FOLLOWING SOIL TYPES ARE FOUND WITHIN THE PROJECT LIMITS
Ly - LURAY SILTY CLAY LOAM, 0-2% SLOPES
OIB - OSHTIMO SANDY LOAM, 2-6% SLOPES
RBA - RAWSON LOAM, 0-2% SLOPES
SOIL DATA REFERENCED FROM WEB SOIL SURVEY LORAIN COUNTY, OHIO SOILS MAPS
VERSION 20, SEPTEMBER 8TH, 2021.
- STAGING AREA IS DESIGNATED FOR STORAGE AND DISPOSAL OF SOLID WASTE,
SANITARY AND TOXIC WASTE, RECYCLING OF USED OR UNUSED HAZARDOUS MATERIAL,
MIXING AND/OR STORAGE OF COMPOUNDS (SUCH AS FERTILIZERS, LIME, ASPHALT,
CONCRETE) ALSO DUMPSTER AREA AND VEHICLE FUELING/MAINTENANCE LOCATION.
- ALL INLETS ON THE PROJECT SITE SHALL BE PROTECTED BY INLET PROTECTION.
CONTRACTOR SHALL PROVIDE APPROPRIATE BMPs FOR EACH INLET, I.E. CURB INLET
SHALL BE PROTECTED WITH DANDY CURB BAG OR ADS FLEXSTORM INLET FILTERS.
- ALL UTILITY LINE EXTENSIONS OR GRADING ONLY AREAS SHALL BE IMMEDIATELY
STABILIZED ACCORDING TO THE CITY OF AVON STANDARDS.
- ALL POST CONSTRUCTION TMOLA WILL BE CONTROLLED BY THE PROPOSED WATER
QUALITY MANHOLE (P-WM-1).
- ALL PIPE CONNECTIONS SHALL BE WATER TIGHT.

DRAWN BY:
RFR

CHECKED BY:
APA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934-7878 (440) 934-7879 FAX

PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

SITE INFORMATION

LIMITS OF DISTURBED AREA = 1.63 ACRES
DRAINAGE AREA = 1.61 ACRES

PRE-CONSTRUCTION
PAVEMENT = 1.41 ACRES
GRASS = 0.20 ACRES
POST-CONSTRUCTION
PAVEMENT/ROOFTOP = 1.10 ACRES
GRASS/LANDSCAPING = 0.51 ACRES

RUNOFF COEFFICIENT PRE-CONSTRUCTION SITE:
((1.41 AC(0.95) + (0.20 AC(0.45))/1.61 = 0.89

RUNOFF COEFFICIENT POST-CONSTRUCTION SITE:
((1.10 AC(0.95) + (0.51 AC(0.45))/1.61 = 0.79

IMPERVIOUSNESS FOR PRE-CONSTRUCTION = (0.89) * 1.63 AC = 1.45
IMPERVIOUSNESS FOR POST-CONSTRUCTION = (0.79) * 1.63 AC = 1.29

PERCENT IMPERVIOUSNESS CREATED BY NEW CONSTRUCTION = -11%
LESS PAVEMENT TO BE INSTALLED THAN EXISTING CONDITIONS

PROJECT DESCRIPTION

- THE PROJECT INVOLVES THE CONSTRUCTION OF A NEW 4,393 S.F.
SINGLE-STORY BUILDING FOR CULVER'S RESTAURANT. IT WILL ALSO INCLUDE
THE CONSTRUCTION OF A CURBED, ASPHALT PARKING LOT TO SURROUND
THE RESTAURANT AND ALL NECESSARY UNDERGROUND UTILITIES TO SERVICE
THE BUILDING.
- PRIOR LAND USE WAS AN ASPHALT/ASPHALT GRINDINGS PARKING LOT FOR
THE NEIGHBORING PROPERTY, JANNELLI AUTOCARS INC.
- THE ESTIMATED START DATE OF CONSTRUCTION IS OCTOBER 1, 2022 AND
THE ESTIMATED COMPLETION DATE IS MAY 31, 2023.

ANTONIO & MARIA JANNELLI
32628 LORAIN ROAD
07-00-003-101-010
"JANNELLI AUTOCARS, INC."

OSR REAL ESTATE HOLDINGS, LLC
07-00-004-109-057

SWP3 LEGEND OF SYMBOLS AND LINETYPES

	SOIL TYPE		EXISTING CONTOURS
	INLET PROTECTION		PROPOSED CONTOURS
	AREAS OF TEMPORARY AND PERMANENT STABILIZATION (CONSTRUCTION SEEDING AND MULCHING)		CONCRETE WASHOUT PIT
	SOIL TYPE BOUNDARY		PRIMARY CONSTRUCTION ENTRANCE
	WORK LIMITS		CONSTRUCTION STAGING AREA (SEE NOTE NO. 2)
	SILT FENCE		

HATCH LEGEND

PROPOSED ASPHALT PAVEMENT
PROPOSED CONCRETE

EXISTING UNDERGROUND UTILITIES NOTE:
THE SIZE & LOCATION, BOTH HORIZONTAL AND VERTICAL, OF THE
UNDERGROUND UTILITIES SHOWN HEREON HAVE BEEN OBTAINED BY A
SEARCH OF AVAILABLE RECORDS. VERIFICATION BY FIELD OBSERVATION
HAS BEEN CONDUCTED WHERE PRACTICAL. HOWEVER, BRAMHALL
ENGINEERING AND SURVEYING COMPANY, DOES NOT GUARANTEE THE
COMPLETENESS NOR ACCURACY THEREOF.



GRAPHIC SCALE
0 10 20 40
(IN FEET)
SCALE: 1" = 20'

CULVER'S RESTAURANT IMPROVEMENTS
SWPP PLAN
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C5.0
JOB NO.
22-5800

- PRE-CONSTRUCTION MEETING.
2. STAKEOUT LIMITS OF DISTURBANCE. INSTALL THE CONSTRUCTION ENTRANCE. INSTALL THE AREA WHERE THE PROJECT TRAILER (IF REQUIRED) CONSTRUCTION DUMPSITE, CONSTRUCTION AND STAGING AREA SHALL BE LOCATED.
3. INSTALL SILT FENCE AND INLET PROTECTION WHERE INDICATED ON THE PLANS.
4. BEGIN EARTH MOVING OPERATIONS. THE CONTRACTOR IS RESPONSIBLE FOR NOTIFYING THE OWNER & THE CITY OF NORTH RIDGEVILLE OF THE LOCATION OF ANY AND ALL EROSION AND SEDIMENTATION CONTROL MEASURES IMPLEMENTED AT ANY BORROW OR SPOIL SITE OF STABILIZED/ERODIBLE MATERIAL.
5. STABILIZE ALL DISTURBED AREAS WITH TEMPORARY SEED AND MULCHING OR REPLACE SEEDING IMMEDIATELY UPON REACHING FINAL GRADE.
6. ALL UTILITY CONSTRUCTION MAY BEGIN IMMEDIATELY FOLLOWING ESTABLISHMENT OF GRADE AND PERMISSION OF THE OWNER. INLET PROTECTION SHALL BE INSTALLED IMMEDIATELY FOLLOWING THE PLACEMENT OF EACH SEASONAL STORM STRUCTURE.
7. STABILIZE ALL UTILITY TRENCHES AT THE END OF EACH WORKDAY BY MEANS OF GRAVEL BACKFILL TO SURFACE, REPAIRING, OR MULCHING.
8. INSTALL PAVEMENT SUB-BASE.
9. BEGIN PAVING. THE AUTHORIZED SWP3 AGENT SHALL NOTE THE LOCATIONS OF ALL CONCRETE WASHOUT PITS ON THE SWP3 PRIOR TO INSTALLATION. REMOVE STONE CONSTRUCTION ENTRANCE ONLY WHEN NECESSARY.
10. REPAVE TOPSOIL, FINE GRADE AND SEED AREAS AS REQUIRED.
11. COMPLETE SITE WORK, PAVEMENT MARKING, FINAL LANDSCAPING AND CLEAN UP.
12. RESEED AND REDRESS ANY AREAS THAT MAY REQUIRE ATTENTION IMMEDIATELY. NOTE THAT LAWN AREAS WILL NOT BE DEEMED STABLE UNTIL A UNIFORM SEVENTY (70%) PERCENT SHALL BE CONSIDERED TO BE IN PLACE AND FUNCTIONAL WHEN THE REQUIRED UNIFORM RATE OF COVERAGE (70%) IS OBTAINED.
13. IF FOR ANY REASON THE PROJECT IS SUSPENDED, THE CONTRACTOR SHALL INSURE THAT ALL INSTALLED EROSION MEASURES ARE FUNCTIONING AND PROPERLY MAINTAINED DURING THE PERIOD. ALL BARE SOILS ARE TO BE SEEDDED AND MULCHED WITH THE TEMPORARY SEED MIXTURE.

3. SOIL EROSION AND SEDIMENT CONTROL MEASURES SHALL BE IMPLEMENTED AS A FIRST STEP OF GRADING AND WITHIN SEVEN (7) DAYS FROM THE START OF CLEARING AND GRUBBING. THESE MEASURES AND PROCEDURES SHALL CONTINUE TO FUNCTION UNTIL THE ENTIRE PROJECT IS STABILIZED.
2. DISTURBED AREAS WHICH WILL REMAIN UNWORKED FOR A PERIOD OF FOURTEEN (14) DAYS OR MORE SHALL BE STABILIZED WITH TEMPORARY AND/OR PERMANENT SEEDING AND MULCHING OR OTHER APPROVED MEANS WITHIN SEVEN (7) DAYS.
3. DITCHES WITH GRADES GREATER THAN 1.5% SHALL HAVE EROSION CONTROL BLANKETS/MATting INSTALLED AS PART OF STABILIZATION MEASURES.
4. REGULAR INSPECTION AND MAINTENANCE SHALL BE PROVIDED FOR ALL EROSION AND SEDIMENT CONTROL PRACTICES. INSPECTIONS SHALL BE MADE AT LEAST ONCE EVERY SEVEN (7) DAYS AND IMMEDIATELY AFTER STORM EVENTS GREATER THAN 0.5 INCHES OF RAIN IN A 24 HOUR PERIOD.
5. ALL EROSION AND SEDIMENT CONTROL PRACTICES MUST CONFORM TO THE LATEST EDITION OF RAINWATER AND LAND DEVELOPMENT, OHIO'S STANDARDS FOR STORM WATER MANAGEMENT, LAND DEVELOPMENT AND URBAN STREAM PROTECTION.
6. CONTRACTOR SHALL COORDINATE THE EXCAVATION AND EMBANKMENT WITH CLIENT & ENGINEER PRIOR TO CONSTRUCTION TO INSURE ADEQUATE STORM WATER POLLUTION PREVENTION MEASURES ARE INCORPORATED WITH THE CONSTRUCTION PROCESS.
7. SEDIMENT LADEN GROUND WATER ENCOUNTERED DURING TRENCHING EXCAVATIONS SHALL BE TREATED PRIOR TO DISCHARGE FROM THE SITE IN A ACCEPTABLE WITH THE LATEST EDITION OF RAINWATER AND LAND DEVELOPMENT, OHIO'S STANDARDS FOR STORM WATER MANAGEMENT, LAND DEVELOPMENT AND URBAN STREAM PROTECTION.
8. PROPOSED CATCH BASIN GRATES LOCATED WITHIN THE PROPOSED PAVEMENT SHALL BE PROTECTED WITH A SILTSACK, DANDY BAG, OR APPROVED EQUIV. THIS STORM WATER POLLUTION PREVENTION CONTROL SHALL REMAIN IN EFFECT UNTIL THE PERMANENT SEEDING OF THE UPLAND AREAS HAVE BEEN ESTABLISHED.
9. EROSION AND SEDIMENT CONTROL PRACTICES NOT ALREADY SPECIFIED ON THIS PLAN MAY BE MADE NECESSARY DUE TO UNFORESEEN ENVIRONMENTAL CONDITIONS AND/OR CHANGES IN THE DRAINAGE PATTERNS CAUSED BY EARTH MOVING ACTIVITIES.
10. ANY REQUIRED MODIFICATIONS AS DETERMINED BY THE OWNER/DEVELOPER, CONTRACTOR OR OHIO EPA SHALL BE APPROVED BY THE SWP3 ENGINEER.
11. ANY APPROVED REVISIONS SHALL BE MADE IMMEDIATELY BY THE SWP3 ENGINEER AND IMPLEMENTED BY THE OWNER, DEVELOPER AND/OR CONTRACTOR.
12. POSITIVE DRAINAGE MUST BE OBTAINED AT ALL TIMES.
13. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO FIELD LOCATE THE STABILIZED CONSTRUCTION ENTRANCES, STAGING AREAS AND WASTE DISPOSAL AREAS.
14. THE SWP3 SHALL CONTAIN SIGNATURES FROM ALL OF THE SUBCONTRACTORS ENGAGED IN ACTIVITIES THAT COULD IMPACT STORM WATER RUNOFF, INDICATING THAT THEY HAVE BEEN INFORMED AND UNDERSTAND THEIR ROLES AND RESPONSIBILITIES IN COMPLYING WITH THE SWP3. OHIO EPA RECOMMENDS THAT THE PRIMARY SITE OPERATOR REVIEW THE SWP3 WITH THE PRIMARY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES AND KEEP A SWP3 TRAINING LOG TO DEMONSTRATE THAT THIS REVIEW OCCURRED.
15. IF AN INSPECTION REVEALS THAT A CONTROL PRACTICE IS IN NEED OF REPAIR OR MAINTENANCE IT MUST BE REPAIRED OR MAINTAINED WITHIN THREE(3) DAYS OF INSPECTION.
16. IF AN INSPECTION REVEALS THAT A CONTROL PRACTICE HAS NOT BEEN IMPLEMENTED ACCORDING TO THE SWP3, THE CONTROL PRACTICE MUST BE IMPLEMENTED WITHIN TEN(10) DAYS FROM THE DATE OF THE INSPECTION. IF THE SWP3 WITH THE PRIMARY CONTRACTOR PRIOR TO THE COMMENCEMENT OF CONSTRUCTION ACTIVITIES AND KEEP A SWP3 TRAINING LOG TO DEMONSTRATE THAT THIS REVIEW OCCURRED.
17. CONTRACTOR SHALL MINIMIZE THE TRACKING OF SEDIMENT AND DEBRIS ON TO EXISTING ROADWAY BY MEANS OF WASHING THE VEHICLE ON SITE. REGULAR SWEEPING MAY BE NECESSARY TO ENSURE THE ROADWAY DOES NOT BUILD UP WITH SEDIMENT AND DEBRIS.

[illegible]

CHECKED BY:
APA



PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

SHEET
C5.2
JOB NO.
22-5800

1. A de-watering plan shall be developed prior to the commencement of any pumping activities.
2. The de-watering plan shall include all pumps and related equipment necessary for the dewatering activities and designate areas for placement of junctions. Controls for practices shall be practiced from above rather than using protection, toxic steel, or other acceptable method of submergence.
3. Water that is not discharged into a settling treatment tank shall directly into waters of the state shall be treated to meet tertiary. Discharged water shall be within $\pm 1^{\circ}$ of

INFORMATION OBTAINED FROM THE 2005 EDITION OF THE STATE OF OHIO'S "RAINWATER AND LAND DEVELOPMENT MANUAL".

DATE	DWG	BY	DESCRIPTION
CITY OF NORTH RIDGEVILLE, OHIO			
DEPARTMENT OF ENGINEERING			
DE-WATERING			
SCALE: NOT TO SCALE			SWP-1
DATE: 10/01/08 DRAWN BY: JAWYER			

(Not to Scale)

2' x 2' Wooden Stake

Filter Sock

3'-4'

Min 12"

SECTION

Fish

1. Measure - Compare the filter stacks that are selected by the operator with the lowest level and the type of air pollution, related to the type of work being done. The filter stack that is identified first is self-determined source of organic vapors. The filter stack that is identified second is self-determined source of inorganic vapors.
 2. Measure - Compare the filter stacks that are selected by the operator with the lowest level and the type of air pollution, related to the type of work being done. The filter stack that is identified first is self-determined source of organic vapors. The filter stack that is identified second is self-determined source of inorganic vapors.
- ISOLATION**
1. Filter stacks and the ground on a level the lowest stacks are selected. The filter stacks are then moved to the ground on a level the lowest stacks are selected. The filter stacks are then moved to the ground on a level the lowest stacks are selected.
 2. Filter stacks and the ground on a level the lowest stacks are selected. The filter stacks are then moved to the ground on a level the lowest stacks are selected. The filter stacks are then moved to the ground on a level the lowest stacks are selected.
- MEASUREMENTS**
1. Measure - Compare the filter stacks that are selected by the operator with the lowest level and the type of air pollution, related to the type of work being done. The filter stack that is identified first is self-determined source of organic vapors. The filter stack that is identified second is self-determined source of inorganic vapors.
 2. Measure - Compare the filter stacks that are selected by the operator with the lowest level and the type of air pollution, related to the type of work being done. The filter stack that is identified first is self-determined source of organic vapors. The filter stack that is identified second is self-determined source of inorganic vapors.
 3. Measure - Compare the filter stacks that are selected by the operator with the lowest level and the type of air pollution, related to the type of work being done. The filter stack that is identified first is self-determined source of organic vapors. The filter stack that is identified second is self-determined source of inorganic vapors.

INFORMATION OBTAINED FROM THE 2006
EDITION OF THE STATE OF OHIO'S "RAINWATER
AND LAND DEVELOPMENT MANUAL".

NO. 100	DATE	BY	SCALE
CITY OF NORTH RIDGEVILLE, OHIO			
DEPARTMENT OF ENGINEERING			
FILTER SOCK			
SCALE: NOT TO SCALE			
DATE: 10/1/06	DRAWN BY: JAMBER		SWP-2

(Not to Scale)

10' Span

10' Wide Deck

10' High Parapet

ELEVATION

SECTION

Flat slope to right of bridge

10' Span

10' Wide Deck

10' High Parapet

10' High Abutment

Bridge deck and parapet joint

Detail of joint and parapet

INFORMATION OBTAINED FROM THE 2006
EDITION OF THE STATE OF OHIO'S "RAINWATER
AND LAND DEVELOPMENT MANUAL."

5. **Set brace** that is constructed between opposite knee hinges
6. **All of these** will be placed in order to the same purposes, so the answer will be **correctable in all**
7. **Correct** that must ensure to provide the most closely spaced concentrated forces in the last three support spans along its length
8. **Size of the air flow** needs to be brought constant, but not neither provided by the air flow will be constant, flowing around it
9. **Set brace** should be placed on the bottom one and the other
10. **When correct, vegetable** should be placed on the air flow as a possible support against the flow direction, but not correct, it will not be placed on the outside of the air flow
11. **The height of the air brace** should be a minimum of 100 mm above the original ground surface
12. **The height of the air brace** should be a minimum of 100 mm above the original ground surface. The brace is made out of a flexible, cast-impervious material, such as plastic, cast rubber, cast concrete, or other materials, which do not allow water to seep underneath the brace when in use
13. **The air brace** should be placed with the same as the downward slope by the gradient, a minimum of 1% downward slope between the ground surface and the air brace, and the bottom of the air brace should be 100 mm above the ground surface

MASS: Mounting	WALD	TYPE
Minimum Tensile Strength	120 lbf (53 kN)	A17M 3-4
Maximum Expansion at 60 °C	50%	A17M 3-4
Minimum Flexural Strength	50 lbf (22 N)	A17M 3-4
Minimum Tear Strength	40 lbf (18 N)	A17M 3-4
Apparent Opening Size	≤ 0.84 mm	A17M 3-4
Moisture Resistance	CX30 at max-6	A17M 3-4
UV Exposure Resistance (Retard)	70%	A17M 3-4

PROJECT	SHEET NO.	DATE	DRAWN BY
CITY OF NORTH ROOPEVILLE, OHIO DEPARTMENT OF ENGINEERING			
SILT FENCE			
SCALE: NOT TO SCALE			SWP-1
DATE: 10/01/08 DRAWN BY: JAMES			

Larry Suffick
CITY OF NORTH BOWLE, INDIANA

Specifications for Temporary Seeding

Making Temporary Seeding

- Applications of temporary seeding shall include mulch, which shall be applied during or immediately after seeding. Seedings made during optimum seeding time or favorable, very wet soil conditions may not need mulch to achieve adequate stabilization.
- Materials:
 - Straw—Straw is used, it shall be untreated small-grain straw applied at a rate of 2 tons per acre or 100 lb./1,000 sq. ft. (2-3 inches).
 - Hydroseeds—If wood cellulose fiber is used, it shall be used at 2000 lb./ac. or 40 lb./1,000 sq. ft.
 - Other—Other acceptable mulches include mulch matting applied according to manufacturer's recommendations or wood chips applied at 6 ton/ac.
- Size: Mulch shall be anchored immediately to minimize loss by wind or water. Anchoring methods:
 - Mechanical—A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be freely chopped but left to a length of approximately 6 inches.
 - Mulch Netting—Netting shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.
- Synthetic Binders—Synthetic binders such as Acrylic DCA (Poly-Tac, DCA-70, Polymert, Terra Track or equivalent) may be used at rates recommended by the manufacturer.
- Wood Cellulose Fiber—Wood cellulose fiber binder shall be applied at a rate of 2,000 lb./ac. or 40 lb./1,000 sq. ft. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 10 lb./1,000 sq. ft.

Specifications for Temporary Seeding

Table 7.8.1 Temporary Seeding Species Selection

Seeding Dates	Species	lb./1,000 sq. ft.	lb./acre
March 7 to August 15	Dark Topsoil	3	120 (3 bushels)
	Annual Ryegrass	1	40
	Perennial Ryegrass	1	40
	Soft Fescue	1	40
	Annual Ryegrass	1	40
	Annual Ryegrass	1.25	50
	Perennial Ryegrass	0.4	17
	Creeping Red Fescue	0.4	17
	Kentucky Bluegrass	0.4	17
August 16th to November	Dark Topsoil	3	120 (3 bushels)
	Annual Ryegrass	1	40
	Perennial Ryegrass	1	40
	Soft Fescue	1	40
	Annual Ryegrass	1	40
	Annual Ryegrass	1.25	50
	Perennial Ryegrass	0.4	17
	Creeping Red Fescue	0.4	17
	Kentucky Bluegrass	0.4	17
November 1 to Feb. 28	Dark Topsoil	3	120 (3 bushels)
	Annual Ryegrass	1	40
	Perennial Ryegrass	1	40
	Soft Fescue	1	40
	Annual Ryegrass	1	40
	Annual Ryegrass	1.25	50
	Perennial Ryegrass	0.4	17
	Creeping Red Fescue	0.4	17
	Kentucky Bluegrass	0.4	17

Note: Other approved species may be substituted.

- Structural erosion and sediment control practices such as diversions and sediment traps shall be installed and stabilized with temporary seeding prior to grading the rest of the construction site.
- Temporary seed shall be applied between construction operations on soil that will not be graded or reseeded for 14 days or greater. These sites shall be reseeded within 7 days after grading.
- The seedbed should be pulverized and loose to ensure the success of establishing vegetation. Temporary seeding should not be performed if seedbed preparation is not possible.
- Seed Anchoring—Temporary vegetation seedings on soil shall establish adequate stands of vegetation, which may require the use of soil amendments. Base rates for time and fertilizer shall be used.
- Seeding Method—Seed shall be applied uniformly with a rotary spreader, disk, cultipacker, seeder, or hydroseeder. When feasible, seed that has been broadcast shall be covered by raking or dragging and then lightly tamped into place using a roller or cultipacker. If hydroseeding is used, the seed and fertilizer will be mixed on-site and the seeding shall be done immediately and without interruption.

Specifications for Topsoiling

Surveying and Stockpiling

- Determine the depth and suitability of topsoil at the site. (For info, contact your local DNR office to obtain a county soil survey report).
- Prior to topsoiling, install appropriate diversion systems and sedimentation controls such as sediment traps and basins.
- Remove the soil material no deeper than what the county soil survey describes as "surface soil" in A or Ap horizon.
- Construct stockpiles in accessible locations that do not interfere with natural drainage. Install appropriate sediment controls to trap sediment such as silt fence immediately adjacent to the stockpile or sediment trap to ensure downwash of the stockpile. Stockpile side slopes shall not exceed a ratio of 2:1.
- If topsoil is stored for more than 14 days, it should be temporary seeded, or covered with a tarp.

Seeding the Topsoil

- Prior to topsoiling, the topsoil should be pulverized.
- To ensure bonding, grade the subsoil and roughen the top 3-4 in. by disk.
- Do not apply when site is wet, muddy, or frozen, because it makes spreading difficult, causes compaction problems, and inhibits bonding with subsoil.
- Apply topsoil evenly to a depth of at least 4 inches and compact slightly to improve contact with subsoil.
- After spreading, grade and stabilize with seeding or acceptable vegetation.

Specifications for Sodding

Materials

- During periods of excessively high temperatures, the soil shall be inspected and approved prior to installation.
- The sod shall be moist and covered during hauling and preparation for placement.
- Sod shall be machine cut to a uniform sod thickness of 1.75 inches, plus or minus 0.25 inches, at the line of cutting. Measurements for thickness shall exclude top and bottom.

Site Preparation

- A subsoiler, plow or other implement shall be used to reduce soil compaction and allow maximum infiltration. Moistening infiltration will help control both runoff rate and water quality. Subsoiling shall not be conducted on steep slopes areas where seed preparation should be limited to what is necessary for establishing vegetation.
- The area shall be graded and leveled upon where needed. See Note/Detail.
- Soil Spot Inventory:
 - Lines—Aggravated ground limestone shall be applied to acidic soils as recommended by a soil test. In lieu of a soil test, lime shall be applied at the rate of 150 lb./1,000 sq. ft. or 2 tons/acre.

Installation

- Farmer—Farmer shall be applied as recommended by a soil test. In lieu of a soil test, fertilizer shall be applied at a rate of 12 lb./1,000 sq. ft. or 100 lb./acre of 10-10-10 or 12-12-12 analysis.
- The time and fertilizer shall be worked into the soil with a disk harrow, spring tooth harrow, or other suitable tillage implement to a depth of 3 inches.
- After the first week, sod shall be reseeded as necessary to maintain adequate moisture and ensure establishment.
- The first mowing shall be attempted and used to a firm root.

Specifications for Mulching

- Mulch and other appropriate vegetative practices shall be applied to disturbed areas within 7 days of grading if the area is to remain undisturbed for more than 14 days or in areas and portions of the site which can be brought to final grade.
- Mulch shall consist of one of the following:
 - Straw—Straw shall be untreated small grain straw applied at the rate of 2 tons/acre, or 100 lb./1,000 sq. ft. (2 to 3 inches thick). The straw mulch shall be spread uniformly by hand or mechanically on the soil surface to cover. For uniform distribution of hand spread mulch, divide area into approximately 1,000 sq. ft. sections and place two 45-lb. bales of straw in each section.
 - Hydroseeds—Wood cellulose fiber should be used at 2,000 lb./ac. or 40 lb./1,000 sq. ft.
 - Other—Acceptable mulches include mulch matting and related erosion control products applied according to manufacturer's recommendations or wood mulches applied at 10-20 tons/acre.
- Mulch Anchoring—Mulch shall be anchored immediately to minimize loss by wind or water. The following are acceptable methods for anchoring mulch:
 - Mechanical—A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be freely chopped but be left generally longer than 6 inches.
 - Mulch Netting—Netting shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.
- Synthetic Binders—Synthetic binders such as Acrylic DCA (Poly-Tac, DCA-70, Polymert, Terra Track or equivalent) may be used at rates specified by the manufacturer.
- Wood Cellulose Fiber—Wood cellulose fiber shall be used at 2,000 lb./ac. or 40 lb./1,000 sq. ft. The wood cellulose fiber shall be mixed with water and the mixture shall contain a maximum of 10 lb./1,000 sq. ft. of wood cellulose fiber.

Specifications for Permanent Seeding

Site Preparation

- Subsoiler, plow, or other implement shall be used to reduce soil compaction and allow maximum infiltration. Moistening infiltration will help control both runoff rate and water quality. Subsoiling should be done when the soil moisture is low enough to allow the soil to crack or fracture. Subsoiling shall not be done on steep slopes areas where seed preparation should be limited to what is necessary for establishing vegetation.
- The site shall be graded as needed to permit the use of conventional equipment for seed preparation and seeding.
- Repeat soil shall be applied where needed to establish vegetation.

Seedbed Preparation

- Lime—Aggravated ground limestone shall be applied to acidic soils as recommended by a soil test. In lieu of a soil test, lime shall be applied at the rate of 150 pounds per 1,000 sq. ft. or 2 tons per acre.
- Fertilizer—Fertilizer shall be applied as recommended by a soil test. In lieu of a soil test, fertilizer shall be applied at a rate of 25 pounds per 1,000 sq. ft. or 100 pounds per acre of 10-10-10 or 12-12-12 analysis.
- The time and fertilizer shall be worked into the soil with a disk harrow, spring tooth harrow, or other suitable tillage implement to a depth of 3 inches. On sloping land, the soil shall be worked on the contour.

Seeding Dates and Soil Conditions

- Seeding shall be done March 1 to May 31 or August 1 to September 30. If seeding occurs outside of the above specified dates, additional mowing and irrigation may be required to ensure a minimum of 80% germination. Tilage for seedbed preparation should be done when the soil is dry enough to crumble and not too dense when compressed by hand. For winter seeding, see the following section on dormant seeding.

Dormant Seeding

- Seeding should not be made from October 1 through November 30. During this period, the seeds are likely to germinate but probably will not be able to survive the winter.
- The following methods may be used for "Dormant Seeding":
 - Straw and Mulch Anchoring Methods:
 - Straw mulch shall be anchored immediately to minimize loss by wind or water.
 - Mechanical—A disk, crimper, or similar type tool shall be set straight to punch or anchor the mulch material into the soil. Straw mechanically anchored shall not be freely chopped but, generally, be left longer than 6 inches.
 - Mulch Netting—Netting shall be used according to the manufacturer's recommendations. Netting may be necessary to hold mulch in place in areas of concentrated runoff and on critical slopes.

Asphalt Creation—Asphalt shall be applied as recommended by the manufacturer or at the rate of 100 gallons per acre.

Table 7.10.2 Permanent Seeding

Seed Size	Seeding Rate		Notes
	Lbs./Acre	Lbs./1,000 Sq. Feet	
	General Use		
Creeping Red Fescue	20-40	10-15	For close mowing & for wilderness with <25% traffic velocity
Domestic Perennial Ryegrass	10-20	5-10	
Domestic Perennial Ryegrass	10-20	5-10	
Soft Fescue	40-100	5-14	
Soft Fescue (Sharp Fescue)	80	8-14	
	Sheep Banks or Cold Slopes		
Soft Fescue	40-100	5-14	
Crown Vetch	10-20	14-12	Do not seed later than August
Soft Fescue	20-30	10-14	
Red Fescue	20-25	10-14	
Soft Fescue	20-30	10-14	Do not seed later than August
Soft Fescue	40-50	5-10	
	Road Ditches and Slopes		
Soft Fescue	40-50	5-10	
Soft Fescue	40	2-14	
Soft Fescue	5	1-10	
	Lawns		
Kentucky Bluegrass	100-120	2	
Perennial Ryegrass		2	
Kentucky Bluegrass	100-120	2	
Creeping Red Fescue		1-10	For prairie areas

SIGNATURE LIST OF ALL CONTRACTORS AND SUBCONTRACTORS INVOLVED IN TEMPORARY SEDIMENT AND EROSION CONTROL PRACTICES

[illegible][illegible]

	2022			2023			
	O	N	D	J	F	M	A
ROUGH GRADING	X	X					
UTILITY INSTALLATION	X	X	X	X	X		
FINE GRADING		X	X			X	X
PAVEMENT						X	X
LANDSCAPING						X	X
TOPSOIL & SEEDING						X	X
TEMP. EROSION CONTROL	X	X	X	X	X	X	X
TEMP. EROSION CONTROL MAINTENANCE	X	X	X	X	X	X	X

Project Name:

[illegible]

Project Name:

[illegible]

Project Name:

[illegible]

	DATE	BY	DESCRIPTION
REVISIONS	8-6-2017	APA	ISSUE TO CLIENT FOR R/C'S
	8-19-2017	APA	ISSUE TO CITY FOR REVIEW

DRAWN BY:
RJR

CHECKED BY:
APA



216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
SWPPP NOTES & DETAILS
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C5.5

JOB NO.
22-5800

CITY OF NORTH RIDGEVILLE STANDARD GENERAL NOTES

GENERAL

1. ALL WORK AND MATERIALS SHALL MEET THE RULES, LAWS & CODES OF THE CITY OF NORTH RIDGEVILLE.
2. THE FOLLOWING UTILITIES MAY BE LOCATED WITHIN THE WORK LIMITS OF THIS PROJECT:

PAVEMENTS	CITY OF NORTH RIDGEVILLE	(440) 353-0842
STORM SEWERS	CITY OF NORTH RIDGEVILLE	(440) 353-0842
SANITARY SEWERS	CITY OF NORTH RIDGEVILLE	(440) 353-0842
WATERLINES	CITY OF NORTH RIDGEVILLE	(440) 353-0842
GAS-COLUMBIAS GAS	DAVE SUREN	(440) 881-2458
TELEPHONE-WINDSTREAM	GEORGE HAMM	(440) 328-4247
ELECTRO-ORIO EDISON	MIKE ZANNI	(440) 328-3271
CABLE-SPECTRUM	RON HUBAL	(440) 388-0416
	(EXT. 625)	
WATER TRANSMISSION	AVON LAKE MUNICIPAL UTILITIES	(440) 933-0228

THE CONTRACTOR SHALL VERIFY THE ABOVE INFORMATION WITH CUPS WHEN HE CONTACTS THEM BEFORE CONSTRUCTION BEGINS.
3. THE CONTRACTOR SHALL LOCATE ALL UTILITIES OR UNDERGROUND STRUCTURES PRIOR TO CONSTRUCTION AND NOTIFY EACH RESPECTIVE UTILITY OWNER FORTY-EIGHT (48) HOURS PRIOR TO COMMENCEMENT OF CONSTRUCTION.
4. WHERE IN ANY CASE THE PLANS AND SPECIFICATIONS DO NOT ENTIRELY COVER MATERIALS AND/OR WORKMANSHIP, THE "STATE OF OHIO, DEPARTMENT OF TRANSPORTATION, CONSTRUCTION AND MATERIAL SPECIFICATIONS", CURRENT EDITION WILL APPLY. COTD REFERENCES MAY BE INDICATED THROUGHOUT THE PLANS, MATERIAL AND WORKMANSHIP SHALL ALSO CONFORM TO THE SPECIFICATIONS, RULES AND ORDINANCES OF THE CITY OF NORTH RIDGEVILLE. WHERE CONFLICTS OCCUR IN THE ABOVE, THE CITY ENGINEER SHALL DETERMINE THE GOVERNING AUTHORITY. ANY DEFECTS IN THE CONSTRUCTION INCLUDING MATERIALS OR WORKMANSHIP SHALL BE REPAIRED OR REPLACED AS DIRECTED BY THE CITY ENGINEER. REFERENCES THROUGHOUT THESE PLANS TO "THE ENGINEER" SHALL BE THE CITY ENGINEER.
5. ALL WORK SHALL BE DONE IN A SAFE MANNER AND AS A MINIMUM SHALL COMPLY WITH THE SPECIFIC SAFETY REQUIREMENTS OF THE OSHA AS DEFINED IN 29 CFR 1926.
6. AT LEAST FIVE DAYS PRIOR TO THE START OF ACTUAL CONSTRUCTION WORK, A PRE-CONSTRUCTION CONFERENCE SHALL BE HELD AT THE DIRECTION OF THE CITY OF NORTH RIDGEVILLE ENGINEER AND APPROPRIATE CITY OFFICIALS, AND THE OWNER'S ENGINEER. THE CONTRACTOR OR HIS AUTHORIZED SUPERINTENDENT SHALL BE PRESENT, ALONG WITH ANY AND ALL PRIVATE UTILITY COMPANY REPRESENTATIVES. THIS MEETING WILL BE FOR COORDINATION AND PROCEDURE REVIEW PRIOR TO COMMENCING ANY PHYSICAL WORK.
7. THE CONTRACTOR SHALL NOT COMMENCE WITH ANY FORM OF CONSTRUCTION WITHOUT GIVING 24 HOUR NOTICE TO THE OFFICE OF THE CITY ENGINEER TO ARRANGE FOR INSPECTION. IF ANY CHANGE IN THE WORK SCHEDULE BECOMES NECESSARY, IT WILL BE THE RESPONSIBILITY OF THE CONTRACTOR TO NOTIFY THE INSPECTOR TO AVOID UNNECESSARY INSPECTION COSTS. IF NO NOTIFICATION IS MADE IN REGARDS TO CANCELLATION OF WORK, THE CONTRACTOR WILL BE CHARGED A MINIMUM OF FOUR (4) HOURS.
8. THE CONTRACTOR SHALL SUPPLY ALL LABOR, MATERIAL, AND EQUIPMENT NECESSARY, SUCH AS CALCIUM CHLORIDE, WATER, OR A MOTORIZED DUST-FREE STREET SWEEPING DEVICE, AS DIRECTED BY THE ENGINEER, TO MAINTAIN ALL ROADWAYS BEING USED FOR ACCESS TO THE CONSTRUCTION SITE.
9. THE CONTRACTOR SHALL FURNISH AND MAINTAIN ALL NECESSARY SAFEGUARDS SUCH AS BARRICADES, SATISFACTORY BARRIERS, LIGHTING, FLAMMERS, TEMPORARY GUARDRAIL, AND SUCH OTHER TRAFFIC CONTROL DEVICES AS PROVIDED IN "ITEM 814 - MAINTAINING TRAFFIC" SO AS TO AVOID DAMAGE AND/OR INJURY TO VEHICLES AND PERSONS USING THE ROADWAY DURING CONSTRUCTION. ALL AREAS OF PAVEMENT REMOVAL WHICH HAVE NOT BEEN FULLY RESTORED SHALL BE PROTECTED WITH CONES OR DRUMS DURING DAYTIME HOURS. THESE AREAS SHALL BE PROTECTED WITH FLASHING BARRICADES OR DRUMS WITH STEADY BURNING LIGHTS AT NIGHT. THE CONTRACTOR SHALL CONDUCT HIS OPERATIONS AS TO THE MINIMUM WORK WITH MINIMAL HAZARD, DELAY, AND INCONVENIENCE TO THE MOTORISTS USING THE STREETS AFFECTED BY THE WORK DONE UNDER THE CONTRACT AND HE SHALL COORDINATE ALL CLOSING OF STREETS WITH THE CITY ENGINEER AND THE POLICE CHIEF OF THE CITY OF NORTH RIDGEVILLE.
10. ACCESS ROADS SHALL BE KEPT FREE OF MUD, DEBRIS, DIRT, ETC. AND SHALL BE CLEANED EVERY DAY AT THE END OF WORK OR MORE FREQUENTLY IF SO ORDERED BY THE CITY OF NORTH RIDGEVILLE.
11. THE CONTRACTOR AND ANY SUBCONTRACTOR SHALL HAVE A COMPETENT SUPERVISOR ON THE PROJECT AT ALL TIMES WHEN WORK IS BEING DONE.
12. NO SLAG OR OTHER SULFUROUS MATERIAL WILL BE USED ON THE PROJECT.

12. FOR RESIDENTIAL SUBDIVISIONS, THE TRAFFIC CONTROL SIGNS WILL BE ERRECTED BY THE CITY OF NORTH RIDGEVILLE AND THE COST OF INSTALLATION WILL BE PAID BY THE DEVELOPER. THE INSTALLATION AND COST OF THE STREET NAME SIGNS AND STREET LIGHTS WILL BE DONE BY THE DEVELOPER AT HIS EXPENSE.
 13. THE CITY ENGINEER SHALL BE NOTIFIED FORTY-EIGHT (48) HOURS PRIOR TO BEGINNING THE ACTUAL CONSTRUCTION.
- ### EARTHWORK
1. ALL EXCAVATION AND FILL WORK SHALL BE DONE IN ACCORDANCE WITH COTD CONSTRUCTION AND MATERIALS SPECIFICATIONS.
 2. THE SUBGRADE IN THE STREET SHALL BE LEFT TWO INCHES HIGH FOR THE PAVEMENT CONTRACTOR TO TIE DOWN TO FINAL GRADE. THE CONTRACTOR SHALL PROOF ROLL THE GRADE WITH A FULLY LOADED (MAXIMUM LEGAL WEIGHT) TRAILER DUMP TRUCK. ANY "SOFT" SPOTS SHALL BE REMOVED AND REPLACED WITH COMPACTED EARTH.
 3. EARTHWORK SHALL BE DONE IN SUCH A FASHION AS TO NOT TRAP WATER DURING CONSTRUCTION.
 4. TREE AND BRUSH CLEARING/DISPOSAL SHALL BE DONE IN A MANNER ACCEPTABLE TO THE CITY OF NORTH RIDGEVILLE.
 5. ALL PAYMENT AREAS SHALL HAVE ALL ORDINANCES AND TOPSOIL REMOVED FROM THE AREA.
 6. AT ALL TIMES DURING THE PROGRESS OF THE WORK AND UNTIL RELEASE OF THE CONTRACTOR FROM HIS GUARANTEE BY THE OWNER, THE CONTRACTOR SHALL MAINTAIN THE BACKFILL TRENCHES AND OTHER EXCAVATIONS. IN PARTICULAR, THOSE TRENCHES OR EXCAVATIONS WHICH ARE WITHIN FIFTEEN (15) FEET OF THE EDGE OF PAVEMENT OR THE EDGE OF TRAVELED ROADWAYS, SHALL BE KEPT FILLED UP TO THE SAME LEVEL AS THE ADJACENT UNDISTURBED GROUND. ANY SETTLEMENT WHICH OCCURS DURING THIS PERIOD SHALL BE IMMEDIATELY FILLED IN TO PREVENT THE POSSIBILITY OF ACCIDENTS.
 7. WHERE EXISTING SEWERS ARE ENCOUNTERED AND ARE INTERFERED WITH, FLOWS SHALL BE MAINTAINED. SERVICE OR OTHER LIQUID MUST BE HANDLED BY THE CONTRACTOR EITHER BY CONNECTION INTO OTHER SEWERS (WITH THE APPROVAL OF THE CITY ENGINEER) OR BY TEMPORARY PUMPS TO A SATISFACTORY OUTLET. SERVICE OR OTHER LIQUID SHALL NOT BE PUMPED, SEALED OR FLOUED OVER THE STREET.
 8. BACKFILL SHALL INCLUDE THE MATERIAL PLACED ABOVE THE BEDDING AND SHALL CONSIST OF FINELY DIVIDED SOIL FREE FROM STONES, RUBBISH, LARGE CLUMPS OR OTHER HARMFUL DEBRIS. THE BACKFILL SHALL BE TAMPED IN SIX (6) INCH LAYERS.
 9. BACKFILL WITHIN EXISTING OR PROPOSED PAVED OR STONE STREETS, ALLEYS, DRIVEWAYS, PARKING AREA AND PROPOSED SIDEWALKS, OR WITHIN FIVE (5) FEET OF THESE AREAS SHALL CONSIST OF A DURABLE GRAVEL OR CRUSHED STONE MEETING THE REQUIREMENTS OF ITEM 304 OF THE CURRENT COTD CONSTRUCTION AND MATERIAL SPECIFICATIONS. THE USE OF A 304 RECYCLED CONCRETE EQUIVALENT AND SLAG IS PROHIBITED. THE GRANULAR BACKFILL SHALL BE MECHANICALLY TAMPED IN SIX (6) INCH LAYERS SO THAT THE BACKFILL WILL HAVE A DENSITY EQUAL TO A MINIMUM OF 90% OF THAT POSSIBLE UNDER OPTIMUM MOISTURE CONTENT AS DETERMINED BY STANDARD PROCTOR TEST.
- ### ROADWAY
1. ALL TREES AND BRUSH, AND ANY OTHER VEGETATION WITHIN THE LIMITS OF THIS PROJECT THAT INTERFERE WITH THE CONSTRUCTION SHALL BE REMOVED FROM THE SITE. STUMPS MAY BE GROUND OUT OR REMOVED FROM THE SITE.
 2. ALL EARTHWORK SHALL HAVE INSPECTION AND TESTING AS DEEMED NECESSARY BY THE CITY OF NORTH RIDGEVILLE. SUCH INSPECTION WILL BE COORDINATED BY THE "CONTRACTOR," WHO SHALL USE A QUALITY TESTING LABORATORY TO MAKE THE TESTS INCIDENTAL TO THE QUALITY CONTROL OF THE EARTHWORK OPERATION. SOIL TESTING AND CLASSIFICATION SHALL BE PERFORMED BY THE SOILS TESTING LABORATORY TO DETERMINE THE PROPER MOISTURE CONTENT AND SOIL DENSITY BEFORE BEGINNING EARTHWORK CONSTRUCTION. THE COST OF THIS INSPECTION AND TESTING WILL BE PAID BY THE CONTRACTOR. THE CONTRACTOR SHALL PRESENT HIS PLAN AND SCHEDULE FOR EARTHWORK OPERATIONS AT THE PRE-CONSTRUCTION CONFERENCE.
 3. WHERE SOFT SUBGRADE IS ENCOUNTERED, DUE TO NO FAULT OR NEGLIGENCE OF THE CONTRACTOR, IN WHICH SATISFACTORY STABILITY CANNOT BE OBTAINED BY MOISTURE CONTENT AND COMPACTION, THE UNSTABLE MATERIAL SHALL BE EXCAVATED TO THE DEPTH REQUIRED BY THE ENGINEER. BACKFILLING OF THESE EXCAVATED AREAS SHALL BE WITH EQUIVALENT MATERIAL, OR AS DIRECTED BY THE ENGINEER.
 4. CONCRETE WILL BE TESTED BY AN ODOT QUALIFIED LABORATORY DURING CONSTRUCTION FOR AIR ENTRAINMENT AND SLUMP. CONCRETE TEST CYLINDERS WILL BE PREPARED FOR EACH 50 YARDS OR FRACTION THEREOF. CONCRETE BEAMS MAY BE PREPARED AT THE CONTRACTOR'S OPTION. THE CONCRETE MIX DESIGN SHALL BE APPROVED BY THE SAME TESTING LABORATORY DESIGNATED TO PERFORM THE ON-SITE INSPECTION PRIOR TO CONSTRUCTION.
 5. CONCRETE PAVEMENT CURING COMPOUND SHALL BE SILENCURE A FROM CHEMMASTERS, 300 EDWARDS ST., MADISON, OHIO, 44037.

6. IN AREAS OF HIGH GROUNDWATER OR WHERE SURFACE SEEPAGE HAS BEEN OBSERVED IT MAY BE NECESSARY TO CONSTRUCT DRAINS PERPENDICULAR TO THE PROPOSED PAVEMENT. THESE UNCLASSIFIED PIPE UNDERDRAINS, CONSTRUCTED IN ACCORDANCE WITH COTD ITEM 605, SHALL BE 3 FEET BELOW PAVEMENT GRADE AND CONNECTED INTO THE APPROPRIATE STORM CONDUIT OR OUTLET. CONDUIT SHALL BE 6" DIAMETER PERFORATED PVC TYPE PS-48 PIPE CONFORMING TO ASTM F-758 OR 8" DIAMETER PERFORATED PSM POLYVINYL CHLORIDE (PVC) PIPE CONFORMING TO ASTM D-3034 SDR 35, WITH A GEOTEXTILE DRAIN SLEEVE MEETING THE REQUIREMENTS OF COTD 712.09, TYPE A, AND WITH NO. 8 STONE OR GRAVEL AGGREGATE.
- ### UNDERGROUND INSTALLATIONS - GENERAL
1. THE VARIOUS UNDERGROUND INSTALLATION ITEMS SHALL INCLUDE, BUT NOT BE LIMITED TO, ALL EXCAVATION, MATERIAL, LABOR, BEDDING, BACKFILL, COMPACTION, EQUIPMENT, UTILITY PROTECTION, MAINTENANCE OF ROADWAYS AND DRIVES UNTIL FINAL REPLACEMENT, PUMPING AND/OR DOWNSHED, CONSTRUCTION AND REMOVAL OF ALL NECESSARY TRENCH PROTECTION AND ALL OTHER INCIDENTAL ITEMS NECESSARY TO INSTALL SUCH UTILITY. THE CONTRACTOR IS TO TOTALLY FAMILIARIZE HIMSELF WITH THE GROUND CONDITIONS THAT NOW DO OR MAY EXIST DURING THE CONSTRUCTION SO AS NOT TO ADVERSELY AFFECT THE INTEGRITY OF ANY UTILITY INSTALLATION OR STRUCTURE ON THE CONSTRUCTION SITE OR ADJACENT PROPERTIES.
 2. ALL SANITARY SEWER AND STORM SEWER CONSTRUCTION SHALL CONFORM WITH COTD ITEM 611.1.
 3. ANY UNSUITABLE MATERIAL, MATERIAL NOT APPROVED BY THE ENGINEER FOR BACKFILL, AND MATERIAL IN EXCESS OF THAT REQUIRED FOR BACKFILLING SHALL BE DISPOSED OF BY THE CONTRACTOR ON THE SITE.
 4. THE CONTRACTOR SHALL TAKE ALL PRECAUTIONS TO PREVENT ANY CAVING OR SETTLING OF EXCAVATION OR TRENCH WALLS WHICH COULD ENDANGER THE SAFETY OF ANY PERSON ENGAGED IN THE WORK OR IN ANY WAY DAMAGE THE UNDERGROUND INSTALLATIONS OF ADJACENT UTILITY OR PROPERTY, OR DIMINISH THE TRENCH WIDTH NECESSARY FOR THE PROPER CONSTRUCTION OF THE UNDERGROUND INSTALLATION OR OTHERWISE HINDER OR DELAY THE WORK. THE TYPE AND AMOUNT OF SUCH PROTECTION, SUCH AS TRENCH BOXES, SHEETING, SHORING, OR BRACING SHALL BE CONSISTENT WITH THE DEPTH AND WIDTH OF EXCAVATION, THE COMPOSITION AND WATER CONTENT OF THE SOIL IN THE PROXIMITY OF STRUCTURES OR OTHER UTILITIES, THE VIBRATION FROM EQUIPMENT AND THE SPILL PLACEMENT, AND SHALL BE IN ACCORDANCE WITH THE LATEST OSHA REGULATIONS.
 5. IN ORDER TO REDUCE GROUND WATER SEEPAGE AND PROVIDE A STABLE TRENCH IT MAY BE NECESSARY TO DEWATER PRIOR TO EXCAVATION OF THE SEWER TRENCH AND/OR PROVIDE TEMPORARY SLUMPS. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ADJACENT STRUCTURES, PAVEMENTS, OR UTILITIES, OR LOSS OF PRIVATE WELL WATER RESULTING FROM DEWATERING, LOSS OF GROUND, HEAVE, TRENCH CONSTRUCTION, AND ANY OTHER CONSTRUCTION METHODS. THE CONTRACTOR SHALL PROTECT ALL EXISTING SEWERS AND UTILITIES THAT THE PROPOSED INSTALLATION CROSSES BY COMPACTING THE BACKFILL UNDER SUCH EXISTING FACILITIES OR SHALL PROTECT THE EXISTING FACILITY IN A MANNER AS APPROVED BY THE ENGINEER. IF SHEETING IS USED, IT MAY BE NECESSARY TO DRIVE THE SHEETING SEVERAL FEET BELOW THE BOTTOM OF THE PIPE WHEN USING MOVABLE TRENCH SUPPORTS OR SHEETING. CARE MUST BE EXERCISED SO AS NOT TO OBTURB THE PIPE LOCATION, JOINTING OR BEDDING MATERIAL. IF STEEL SHEETING IS USED IT SHALL BE HELD IN PLACE BY LONGITUDINAL BEAMS AND CROSS BRACES OR STRUTS AS REQUIRED TO RESTRAIN THE TOP OF THE SHEETING. IF TIMBER SHEETING AND BRACING IS USED, IT MUST BE OF GOOD QUALITY AND OF HARDWOOD CONSTRUCTION. AFTER THE PIPE HAS BEEN INSTALLED AND THE BALANCE OF THE BEDDING MATERIAL HAS BEEN PLACED OVER THE PIPE, THE REMOVAL OF ANY TRENCH PROTECTION SHALL BE CAREFULLY CONTROLLED. THE CONTRACTOR SHALL DEMONSTRATE THAT THE REMOVAL OF THE TRENCH PROTECTION WILL NOT ADVERSELY AFFECT THE PIPE LOCATION AND BEDDING. IF SHEETING CANNOT BE REMOVED WITHOUT ADVERSELY AFFECTING THE PIPE AND BEDDING LOCATION, THE ENGINEER MAY ORDER THE SHEETING CUT OFF AT SOME POINT, AT LEAST ONE FOOT ABOVE THE TOP OF THE PIPE AND LEFT IN PLACE.
 6. PRIOR TO ANY CONNECTION INTO AN EXISTING SEWER MANHOLE OR CONDUIT THE CONTRACTOR SHALL TAKE SUCH MEASURES AS NECESSARY, "AS APPROVED BY THE ENGINEER," (I.E. TEMPORARY PLUGS, SAND BAGS, ETC.) DURING THE COURSE OF THE CONSTRUCTION OF THE PROPOSED SEWERS, TO GUARD AGAINST ANY DRAINAGE FROM ENTERING THE EXISTING SYSTEM AND POSSIBLY CONTAMINATING SUCH SYSTEM WITH S.E.I.

7. WHERE THE PROPOSED IMPROVEMENTS CROSS EXISTING OR PROPOSED PAVEMENTS, INCLUDING A POINT FIVE (5) FEET BEYOND SUCH CROSSINGS, OR WHERE THE CONSTRUCTION METHODS USED BY THE CONTRACTOR RESULT IN THE TRENCH WALL BEING LESS THAN 3 FEET FROM THE EDGE OF THE PAVEMENT, THE ENTIRE TRENCH BACKFILL SHALL BE COMPACTED IN LAYERS NOT TO EXCEED 8 INCHES IN THICKNESS WITH MECHANICAL TAMPERS MEETING NINETY-EIGHT (98) PERCENT OF MAXIMUM LABORATORY DRY WEIGHT.
 8. THE LINE AND GRADE OF SEWER MAINS SHALL BE CONTROLLED DURING THE SEWER CONSTRUCTION BY USE OF AN APPROVED LASER DEVICE.
 9. AT ALL STORM SEWER MAIN AND SANITARY SEWER MAIN INTERSECTIONS (CROSSINGS) WHEN PIPE CLEARANCE IS LESS THAN 18", THE LOWER PIPE SHALL BE ENCASED AND THE UPPER PIPE SHALL BE MONOTONICALLY CRODDED IN 2500 PS CONCRETE FOR THE WIDTH OF THE TRENCH. AT PIPE CROSSINGS GREATER THEN 18" THE BACKFILL BELOW THE UPPER PIPE SHALL BE COMPACTED IN PLACE TO THE SATISFACTION OF THE ENGINEER.
- ### STORM SEWERS
1. STORM SEWER CONDUIT SHALL CONFORM TO THE FOLLOWING REQUIREMENTS: STORM CONDUIT BETWEEN STREET BASINS AND CONNECTING TO MANHOLE SHALL BE (A) ONLY IF COVER IS LESS THAN OR EQUAL TO ONE FOOT MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE SUBGRADE, OR MAY BE (C) IF COVER IS GREATER THAN ONE FOOT MEASURED FROM THE TOP OF THE PIPE TO THE BOTTOM OF THE SUBGRADE. ALL FOOTING DRAIN CONNECTIONS SHALL BE (B) ONLY.
 - A. REINFORCED CONCRETE PIPE ASTM C-76, "B" OR "C" WALL, 8 FOOT LENGTHS, WITH AN "O" RING CONFINED GASKET JOINT PER ASTM C-443; (A) 12" & LARGER DIA. CLASS IV.
 - B. POLYVINYL CHLORIDE (PVC) ASTM D-3034 (SDR 35) (COTD 707.45) WITH GASKET MATERIAL CONFORMING TO ASTM F-477 AND JOINTS PER ASTM D-3212 OR SOLVENT CEMENT JOINTS PER ASTM D-2584.
 - C. PERMA-LOC (PVC) AASHTO SPECIFICATION IN M-304M (COTD 707.43) WITH INTEGRAL BELL GASKET JOINTS IN ACCORDANCE WITH ASTM D-3212 AND INSTALLED PER THE MANUFACTURER'S RECOMMENDATIONS.
 - D. ULTRA-RIB (PVC) ASTM F 794 (COTD 707.43) WITH INTEGRAL BELL AND SPIGOT JOINT IN ACCORDANCE WITH ASTM D-3212 AND INSTALLED PER MANUFACTURER'S RECOMMENDATIONS.
 - E. SMOOTH INTERIOR, COORDINATED, HIGH DENSITY POLYETHYLENE PIPE (HDPE) CONFORMING TO AASHTO SPECIFICATIONS M252, TYPE 5 AND M-284 TYPE 3, (COTD 707.33) ADS M-12, HANCOX M-12, OR APPROVED EQUAL. THE JOINTS SHALL BE SILT-TIGHT AND THE GASKETS SHALL MEET THE REQUIREMENTS OF ASTM F477 (NOT PRESSURE RATED), INSTALLED IN ACCORDANCE WITH ASTM D-3212 AND MANUFACTURER'S RECOMMENDATIONS.
 2. OTHER OPTIONAL MATERIALS MAY BE USED WHEN APPROVED BY THE CITY ENGINEER.
 3. UNDERDRAINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH COTD ITEM 605. CONDUIT SHALL BE 6" DIAMETER PVC TYPE PS-48 PIPE CONFORMING TO ASTM F-758, OR 8" DIAMETER PSM POLYVINYLCHLORIDE (PVC) PIPE CONFORMING TO ASTM D-3034 SDR 35, WITH A GEOTEXTILE SLEEVE MEETING THE REQUIREMENTS OF COTD ITEM 712.09, TYPE A, AND WITH THE GRANULAR MATERIAL BEING NO. 57 AGGREGATE (NO SLAG)
 4. ROOF DRAINS ARE TO BE DISCHARGED ONTO SPLASH BLOCKS. NO CONNECTION TO STORM SEWER.
 5. AT LEAST 60 DAYS PRIOR TO THE END OF THE PERIOD FOR WHICH IMPROVEMENTS ARE COVERED BY MAINTENANCE BONDS, THE DEVELOPER SHALL CLEAN AND VIDEO TAP THE STORM SEWER, SANITARY SEWER AND MANHOLES, OR CAUSE THIS TO BE DONE BY A SUBCONTRACTOR OR BUILDING(S) WHO THE DEVELOPER HOLDS RESPONSIBLE PRIOR TO RELEASE OF THE MAINTENANCE BONDS COVERING THE IMPROVEMENTS. TWO (2) COPIES OF THE VIDEO TAPE(S) AND A WRITTEN REPORT OF THE RESULTS SHALL BE FURNISHED TO THE DEVELOPER AND THE CITY ENGINEER, BOTH THE TAPING AND THE WRITTEN REPORT SHALL BE DUE TO THE SATISFACTION OF THE DEVELOPER AND THE CITY ENGINEER OR THEIR DESIGNERS. ANY AND ALL PROBLEMS DISCOVERED SHALL BE REMEDIATED WITHIN TEN (10) WORKING DAYS OF DISCOVERY OR BY THE PARTY THE DEVELOPER SHALL CAUSE TO REMEDIATE THE PROBLEMS, IF ANY.
 6. ALL MAIN LINE STORM SEWERS SHALL BE CLEANED AND VIDEO TAPED IMMEDIATELY AFTER CONSTRUCTION AND THE VIDEO TAPE SUBMITTED TO THE CITY ENGINEER FOR REVIEW AND APPROVAL. ALL DEFECTS SHALL BE PROMPTLY REPAIRED BY THE CONTRACTOR.

OCTOBER 1, 2008 - REV. 5/11/09, 9/29/09, 12/7/09, 8/16/10

5/9/17, 6/28/17, 6/5/20

DATE	BY	DESCRIPTION
8-2-2008	APA	FINAL DESIGN FOR REVIEW
8-2-2008	APA	FINAL DESIGN FOR REVIEW

DRAWN BY:
APA

CHECKED BY:
APA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
MISCELLANEOUS DETAILS
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C6.0
JOB NO.
22-5800

CITY OF NORTH RIDGEVILLE STANDARD GENERAL NOTES

SANITARY SEWERS

1. ROOF DRAINS, FOUNDATION DRAINS, AND OTHER CLEAN WATER CONNECTIONS TO THE SANITARY SEWER ARE PROHIBITED.
2. THE SANITARY SEWER SHALL PASS A LOW PRESSURE AIR TEST AND A 5% DEFLECTION TEST. THESE TESTS SHALL BE CONDUCTED BY A COMPETENT TESTER, PREFERABLY AN INDEPENDENT TESTING COMPANY.

A. DEFLECTION TEST:

IF PVC PIPE IS USED, THE DEFLECTION TEST WILL BE RUN NOT LESS THAN 30 DAYS NOR MORE THAN 45 DAYS AFTER THE FINAL AND FULL BACKFILL HAS BEEN PLACED. THE TEST IS REQUIRED ON ALL PVC PIPE. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY EQUIPMENT FOR THE DEFLECTION TESTING. ALL EQUIPMENT SHALL BE APPROVED BY THE CITY OF NORTH RIDGEVILLE PRIOR TO THE START OF TESTING. WHERE POSSIBLE, ELECTRONIC EQUIPMENT SHALL BE USED TO MEASURE AND RECORD THE DEFLECTION IN THE FLEXIBLE PIPE. NO PIPE SHALL EXCEED A DEFLECTION OF FIVE PERCENT. IF SUCH EQUIPMENT IS NOT AVAILABLE, THE DEFLECTION TEST CAN BE RUN BY THE USE OF MANDRELS, HAVING A DIAMETER EQUAL TO NINETY-FIVE (95) PERCENT OF THE INSIDE DIAMETER OF THE PIPE, PULLED THROUGH THE SEWER WITHOUT MECHANICAL PULLING DEVICES. MANDRELS SHALL BE CONSTRUCTED WITH AT LEAST NINE EVENLY SPACED ARMS OR PRONGS. A METAL PROVING RING SHALL BE PROVIDED TO VERIFY THE ACCURACY OF THE MANDREL TO THE CITY ENGINEER. THE LENGTH OF THE MANDREL SHALL BE EIGHT INCHES FOR EIGHT INCH PIPE, TEN INCHES FOR TEN AND TWELVE INCH PIPE. IF ANY SECTION OF CONDUIT EXCEEDS THE DEFLECTION OF FIVE PERCENT, THE NECESSARY CORRECTIONS SHALL BE MADE. CONDUIT WHICH HAS DEFLECTED MORE THAN FIVE PERCENT MUST BE CORRECTED TO THE SATISFACTION OF THE CITY ENGINEER BY THE CONTRACTOR. THE PIPE SHALL BE MEASURED IN COMPLIANCE WITH ASTM D2122.

- B. THE LEAKAGE, EXFILTRATION, OR INFILTRATION SHALL NOT EXCEED 100 GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY.

3. THE SANITARY SEWER MAIN AND ITS LATERALS SHALL BE PVC ASTM D3034, WITH GASKETED JOINTS MEETING ASTM D3212 SDR-35, UNLESS DEPTH OF COVER IS 15 FEET OR GREATER THEN USE ASTM D3034 SDR-26.
4. SANITARY MANHOLES SHALL BE PRECAST CONCRETE MEETING THE STANDARDS OF THE CITY OF NORTH RIDGEVILLE. THE MANHOLE SHALL BE FULLY INSPECTED AROUND ITS EXTERIOR BEFORE BACKFILLING. ANY SUSPECTED WEAK SPOTS, CRACKS, ETC. THAT MAY CAUSE A LEAK IN THE FUTURE SHALL BE PATCHED, SEALED, ETC. WITH WATERPROOFING MATERIALS. PARTICULAR ATTENTION SHALL BE PAID TO THE BARREL JOINTS, STEP LOCATIONS, LIFTING HOLES, AND THE JOINT BETWEEN THE GRADE RINGS AND THE CASTING. ALL MANHOLES SHALL BE VACUUM TESTED PER ASTM-C1244.
5. GRADE RINGS SHALL BE USED TO BRING ALL CASTING TO GRADE, MAXIMUM 11 INCHES.
6. IF THE CASTING IS DISTURBED AFTER IT IS INSTALLED IT SHALL BE COMPLETELY REMOVED, CLEANED, AND THEN REINSTALLED.
7. THE CONTRACTOR SHALL MARK ALL LATERAL LOCATIONS IN THE FIELD WITH A CONTINUOUS 4" X 4" WOODEN STAKE FROM INVERT TO 2'-6" ABOVE GRADE, PAINTED ORANGE OR RED.
8. "LOW-PRESSURE" AIR TESTING FOR PLASTIC PIPE SHALL BE PER ASTM-F1417.
9. ALL MAINLINE SANITARY SEWER SHALL BE VIDEO TAPED PER CITY ORDINANCE.
10. HORIZONTAL AND VERTICAL SEPARATION BETWEEN WATERLINE, STORM SEWERS, AND SANITARY SEWERS SHALL BE MAINTAINED AS FOLLOWS:

- A. A MINIMUM 10-FOOT HORIZONTAL SEPARATION (MEASURED OUT-TO-OUT CLEAR) BETWEEN THE PROPOSED WATERLINE AND THE STORM SEWER WILL BE MAINTAINED.
- B. A MINIMUM 10-FOOT HORIZONTAL SEPARATION (MEASURED OUT-TO-OUT CLEAR) BETWEEN THE PROPOSED WATERLINE AND THE SANITARY SEWER WILL BE MAINTAINED.
- C. A MINIMUM 18-INCH VERTICAL CLEARANCE (MEASURED OUT-TO-OUT CLEAR) BETWEEN THE PROPOSED WATERLINE AND THE SANITARY SEWER WILL BE MAINTAINED.
- D. A MINIMUM 18-INCH VERTICAL CLEARANCE (MEASURED OUT-TO-OUT CLEAR) BETWEEN THE PROPOSED WATERLINE AND THE STORM SEWER WILL BE MAINTAINED.

11. THE CONTRACTOR WILL COLOR FIRM BOTH SANITARY AND STORM SEWERS TO VERIFY THAT THEY ARE FREE OF DEFECTS AND FOREIGN MATTER AND THAT THEY ARE TO THE PROPER ALIGNMENT PRIOR TO FORMAL ACCEPTANCE BY THE CITY OF NORTH RIDGEVILLE. THE INSPECTION AND TESTING SHALL BE DONE BY AN EXPERIENCED AND CERTIFIED FIRM ENGAGED IN THIS TYPE OF WORK, AS APPROVED BY THE CITY. WRITTEN REPORTS FOR ALL INSPECTION AND TESTING SHALL BE SUBMITTED TO THE OWNER AND THE CITY FOR APPROVAL. ALL SEWERS WILL BE FLUSHED AND HAVE A VCR TELEVIEWED INSPECTION IN ACCORDANCE WITH THE CITY OF NORTH RIDGEVILLE SPECIFICATIONS AFTER THE COMPLETION OF THE PAVEMENT CONSTRUCTION AND SEEDING OF THE DISTURBED AREAS, BUT PRIOR TO THE ISSUANCE OF BUILDING PERMITS. IF THE INSTALLATION FAILS TO MEET THE REQUIREMENTS OF THE TESTS AND INSPECTION, THE CONTRACTOR SHALL REPAIR OR REPLACE ALL DEFECTS AND RETEST AND RE-FILM THE INSTALLATION. THE CONTRACTOR SHALL NOTIFY THE CITY 48 HOURS BEFORE THE STORM AND SANITARY SEWERS ARE TELEVIEWED.

WATER SYSTEM

1. THE WATER SYSTEM SHALL BE CONSTRUCTED PER THE CITY OF NORTH RIDGEVILLE STANDARDS & REGULATIONS.
2. THE WATERLINE SHALL BE PVC MEETING THE REQUIREMENTS OF AWWA C900, OR C909, CLASS 150 PIPE CONFORMING TO D118 OR DUCTILE IRON PIPE, CLASS 52, CEMENT LINING MEETING THE REQUIREMENTS OF ANSI A21.51 AND AWWA C-151.
3. A MINIMUM OF 35 PSI SHALL BE MAINTAINED TO THE CURB STOP DURING NORMAL OPERATING CONDITIONS. BOOSTER PUMPS ARE NOT PERMITTED ON SERVICE CONNECTIONS.
4. ALL FITTINGS FOR THE WATER MAIN SHALL BE RESTRAINED JOINT TYPE (MEGA-LUG) AND SHALL BE DUCTILE IRON MEETING AWWA C-153.
5. ALL BENDS OR TEES ON THE MAIN SHALL BE RESTRAINED JOINT TYPE (MEGA-LUG) AND BLOCKED WITH WOOD.
6. ALL DUCTILE IRON PIPE, CAST IRON FITTINGS AND HYDRANTS SHALL BE POLYWRAPPED ACCORDING TO AWWA C-105. RESTRAIN TWO PIPE JOINTS EITHER SIDE OF TEE OR ELBOW IN ADDITION TO THRUST RESTRAINT.
7. ALL FITTINGS SHALL BE GIVEN A CEMENT MORTAR LINING AT THE POINT OF MANUFACTURE. THE LINING SHALL CONFORM TO ANSI A21.4, AWWA C-104 AND ALL SUBSEQUENT AMENDMENTS.
8. ALL FITTINGS SHALL BE DESIGNED FOR A WORKING PRESSURE OF NOT LESS THAN 150 PSI.
9. ALL VALVES AND HYDRANT FITTINGS MUST HAVE STAINLESS STEEL NUTS AND BOLTS, T-BOLTS AND NUTS FOR ALL MECHANICAL JOINTS MUST HAVE A BITUMASTIC COATING.
10. ALL PIPE SHALL BE GIVEN A CEMENT MORTAR LINING AT THE POINT OF MANUFACTURE. THE MORTAR LINING SHALL BE NOT LESS THAN 1/16 INCH IN THICKNESS AND CONFORM TO ANSI A21.4, AWWA C-104 AND ALL SUBSEQUENT AMENDMENTS.
11. ALL JOINTS SHALL BE MECHANICAL OR PUSH-ON TYPE. MECHANICAL JOINTS SHALL MEET THE REQUIREMENTS OF ANSI A21.11, AWWA C-111 AND ALL SUBSEQUENT AMENDMENTS. PUSH-ON JOINTS SHALL BE MADE IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE PIPE MANUFACTURER.
12. ALL HYDRANTS SHALL HAVE MECHANICAL TYPE JOINTS.
13. WHENEVER CHANGES IN LINE AND GRADE OF THE MAIN AS SHOWN ON THE DRAWINGS ARE NOT STANDARD FITTING DEFLECTIONS, THE CONTRACTOR WILL BE PERMITTED TO USE AN APPROVED COMBINATION OF STANDARD FITTINGS AND SMALL DEFLECTION OF THREE DEGREES PER JOINT IN THE ADJOINING LENGTHS OF PIPE (NOT TO EXCEED THE MANUFACTURER'S SPECIFICATIONS).
14. CLOSURE PIECES SHALL BE ACCURATELY MEASURED AND CUT, IN THE FIELD, AND INSTALLED USING SOLID TYPE LONG PATTERN SLEEVES AS SHOWN OR AS REQUIRED.

GATE VALVES

1. VALVES SHALL CONFORM IN ALL RESPECTS WITH AWWA C-500 OR C-509 AND WITH THE CITY OF NORTH RIDGEVILLE ENGINEERING DEPARTMENT SPECIFICATIONS.
2. ALL GATE VALVES THREE INCH AND LARGER SHALL HAVE A NON-RISING STEM, SHALL OPEN BY TURNING TO THE RIGHT, AND SHALL BE OPERATED BY A TWO-INCH SQUARE OPERATING NUT. NUTS SHALL HAVE AN ARROW AND THE WORD "OPEN" CAST THEREON TO INDICATE THE DIRECTION OF TURNING TO OPEN THE VALVE.
3. ALL GATE VALVES THREE-INCH TO 16 INCH IN SIZE SHALL BE OF RESILIENT WEDGE SEATED TYPE. THE VALVES SHALL HAVE RUBBER "O" RING PACKING SEALS AND MECHANICAL JOINT ENDS UNLESS OTHERWISE SPECIFIED OR APPROVED BY THE CITY ENGINEER. IF THE TOP OF THE OPERATING NUT IS MORE THAN 36 INCHES BELOW FINISHED GRADE, AN EXTENSION STEM SHALL BE PROVIDED TO PLACE THE OPERATING WRENCH NUT BETWEEN 24 AND 36 INCHES BELOW THE SURFACE.
4. ALL 20 AND 24 INCH GATE VALVES SHALL BE PROVIDED WITH A FOUR INCH BYPASS VALVE AND ALL 30 INCH TO 48 INCH VALVES INCLUSIVE SHALL BE PROVIDED WITH A SIX INCH BYPASS VALVE LOCATED BELOW THE CENTER OF THE VALVES.
5. ALL GATE VALVES 18 INCH AND UNDER SHALL BE CONSTRUCTED TO WORK VERTICALLY. GATE VALVES 20 INCH AND LARGER IN SIZE SHALL BE CONSTRUCTED TO WORK HORIZONTALLY.
6. ALL NUTS AND BOLTS SHALL BE STAINLESS STEEL.

BUTTERFLY VALVES

1. IN LIEU OF GATE VALVES, BUTTERFLY VALVES MAY BE USED ON 12 INCH AND LARGER MAINS.
2. ALL BUTTERFLY VALVES SHALL BE OF RUBBER-SEATED TIGHT-CLOSING TYPE. THEY SHALL MEET OR EXCEED PERFORMANCE REQUIREMENTS FOR WATER APPLICATIONS OF APPLICABLE RECOGNIZED STANDARDS SUCH AS AWWA C-504. ALL VALVES SHALL BE MUELLER BUTTERFLY VALVES OR AN APPROVED EQUAL.
3. BOTH VALVE ENDS SHALL BE MECHANICAL JOINT PER AWWA C-111. ACCESSORIES (BOLTS, GLANDS AND BASKETS) SHALL BE SUPPLIED BY THE VALVE MANUFACTURER.
4. ALL VALVES MUST USE FULL AWWA C-504, CLASS 150B VALVE SHAFT DIAMETER AND FULL CLASS 150B UNDERGROUND-SERVICE-OPERATOR TORQUE RATING THROUGHOUT ENTIRE TRAVEL, TO PROVIDE CAPABILITY FOR OPERATION IN EMERGENCY SERVICE.
5. VALVE BODY SHALL BE HIGH-STRENGTH CAST IRON ASTM A126, CLASS B WITH 18-8 TYPE 304 STAINLESS STEEL BODY SEAT. VALVE VANE SHALL BE HIGH STRENGTH CAST IRON ASTM A48 CLASS 40, HAVING RUBBER SEAT MECHANICALLY SECURED WITH AN INTEGRAL 18-8 STAINLESS STEEL CLAMP RING AND 18-8 STAINLESS STEEL SELF-LOCKING SCREWS.
6. RUBBER SEAT SHALL BE A FULL-CIRCLE 360 DEGREE SEAT NOT PENETRATED BY THE VALVE SHAFT. VALVE SHAFT SHALL BE ONE PIECE, EXTENDING FULL SIZE THROUGH THE ENTIRE SHAFT AND OPERATOR WITH NO NECK-DOWN, KEYWAYS OR HOLES TO WEAKEN IT. FOR 14 INCH AND LARGER, VALVE SHAFTS SHALL BE 18-8 STAINLESS STEEL SHAFT DESIGN KEYED TO THE VANE WITH STAINLESS STEEL TAPER PINS.
7. VALVE OPERATOR SHALL BE OF THE TRAVELING-NUT TYPE, SEALED, GASKETED, AND LUBRICATED FOR OVERLOAD SERVICE. IT SHALL BE CAPABLE OF WITHSTANDING AN OVERLOAD INPUT TORQUE OF 450 FT-LBS AT FULL-OPEN OR CLOSED POSITION WITHOUT DAMAGE TO THE VALVE OR VALVE OPERATOR. IT SHALL BE DESIGNED TO RESIST SUBMERGENCE IN WATER TO 25 FEET HEAD PRESSURE, FOR UP TO 72 HOURS.
8. THE VALVE SHALL BE CAPABLE OF EASY CLOSURE BY ONE MAN USING A STANDARD VALVE KEY, EVEN UNDER EMERGENCY LINE-BREAK CONDITIONS AS SEVERE AS THOSE THAT WOULD CAUSE A VALVE MAXIMUM OPERATING TORQUE REQUIREMENT OF AS MUCH AS TWO TIMES AWWA CLASS 150B.
9. ALL VALVES SHALL BE TESTED, BUBBLE-TIGHT AIR-UNDER-WATER, BY THE MANUFACTURER AS FOLLOWS:

4" THROUGH 12"	175 PSI
14" AND UP	150 PSI

IN ADDITION A 300 PSI HYDROSTATIC TEST SHALL BE GIVEN TO THE ASSEMBLED VALVE. THIS 300 PSI PRESSURE SHALL ALSO BE APPLIED AGAINST THE FULLY CLOSED VANE OF EACH VALVE TO PROVE STRUCTURAL SOUNDNESS AND ASSURE COMPATIBILITY WITH FIELD LINE TEST PROCEDURES.

HYDROSTATIC TESTING

1. ALL WATER MAINS SHALL BE INSTALLED AND PRESSURE TESTED ACCORDING TO AWWA C-605, LATEST EDITION.
2. TESTING PLUGS OR CAPS SHALL BE FURNISHED AND INSTALLED FOR TESTING COMPLETED SECTIONS OF PIPE AND FITTINGS.
3. BEFORE THE TEST PRESSURE IS APPLIED, CARE SHALL BE TAKEN TO INSURE THE REMOVAL OF AIR IN THE LINE AT THE HIGH POINTS AND TO SEE THAT ALL CAPS, PLUGS AND EXPOSED PORTIONS OF THE LINE ARE SECURELY BRACED.
4. THE CONTRACTOR SHALL SUPPLY ALL NECESSARY EQUIPMENT, GAUGES, TOOLS, AND LABOR TO PROPERLY CONDUCT THE TEST. ALL TESTING SHALL BE DONE UNDER THE DIRECTION OF THE CITY OF NORTH RIDGEVILLE ENGINEERING DEPARTMENT.
5. WATER FOR FILLING THE TEST SECTIONS WILL BE PROVIDED BY THE CITY OF NORTH RIDGEVILLE.
6. IF THE LEAKAGE TEST EXCEEDS THE MAXIMUM ALLOWED, THE CONTRACTOR SHALL LOCATE AND REPAIR THE LEAKS AND AGAIN TEST THE PIPE. THIS PROCESS SHALL BE CONTINUED UNTIL THE LEAKAGE IS WITHIN THE ACCEPTABLE LIMITS.

DISINFECTING MAINS

1. AFTER HYDROSTATIC TESTING, THE NEW LINE SHALL BE THOROUGHLY FLUSHED IN ACCORDANCE WITH AWWA C-651. THE MAIN SHALL BE FLUSHED THROUGH THE HYDRANTS, BLOWOFFS OR BY SOME OTHER APPROVED MEANS.
2. CHLORINE SHALL BE ADDED AT SUCH RATES AS TO GIVE A MINIMUM CHLORINE DOSAGE OF 50 PARTS PER MILLION AVAILABLE CHLORINE.
3. CHLORINE USED AS A DISINFECTING AGENT MAY BE EITHER LIQUID CHLORINE OR AN ANHYDROUS CALCIUM HYPOCHLORITE COMPOUND SUCH AS "HTH" OR AN APPROVED EQUAL. LIQUID CHLORINE SHALL BE APPLIED THROUGH A SUITABLE CHLORINE FEEDING MACHINE AND INJECTION NOZZLE. ANHYDROUS CALCIUM HYPOCHLORITE SHALL BE FED AS A SOLUTION USING A SUITABLE INJECTION PUMP.
4. FOLLOWING THE DISINFECTING PERIOD, THE LINE SHALL BE THOROUGHLY FLUSHED UNTIL THE REPLACEMENT WATER THROUGHOUT THE ENTIRE LENGTH OF THE LINE SHALL UPON TEST, BOTH CHEMICALLY AND BACTERIOLOGICALLY, BE PROVEN EQUAL TO THE QUALITY OF THE WATER IN THE EXISTING SYSTEM.
5. THE CITY OF NORTH RIDGEVILLE SERVICE DEPARTMENT WILL TEST THE WATER. THE CONTRACTOR IS RESPONSIBLE FOR THE TEST ARRANGEMENTS.

CURB CONNECTIONS

1. THE SIZE OF SERVICE CONNECTIONS SHALL BE THREE-QUARTER INCH (3/4") DIAMETER MINIMUM.
2. SERVICE CONNECTIONS SHALL BE K COPPER. ALTERNATIVELY, 200 PSI PLASTIC PIPE APPROVED FOR POTABLE WATER, WITH TRACER WIRE, MAY BE USED PROVIDED THE 50 FEET OF CONNECTION ADJACENT TO THE SERVED STRUCTURE IS K COPPER AND THE STRUCTURE SERVED IS MORE THAN 200 FEET FROM THE ROADWAY RIGHT OF WAY LINE.
3. FOR STRUCTURES GREATER THAN 200 FEET FROM THE CENTERLINE OF THE ROADWAY, A METER VAULT MUST BE PROVIDED NEAR THE RIGHT OF WAY LINE OF THE ROADWAY.

OCTOBER 1, 2008 REVISED 9/29/09, 2/19/10

DATE	BY	DESCRIPTION
8-4-2011	APA	DATE TO CLIENT FOR REVIEW
8-10-2011	APA	DATE TO CITY FOR REVIEW

DRAWN BY:
RFB

CHECKED BY:
APA

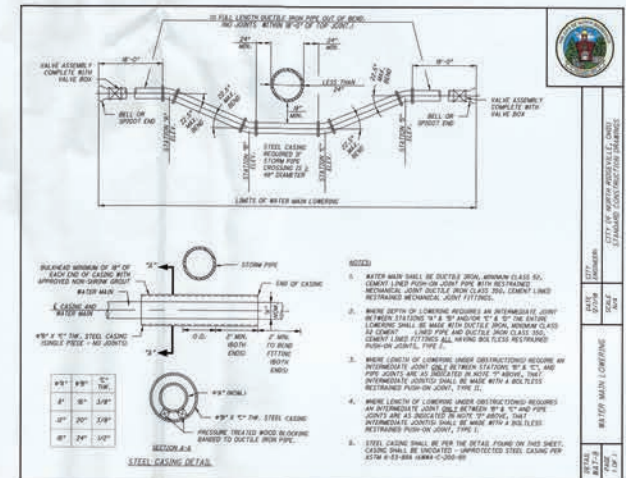
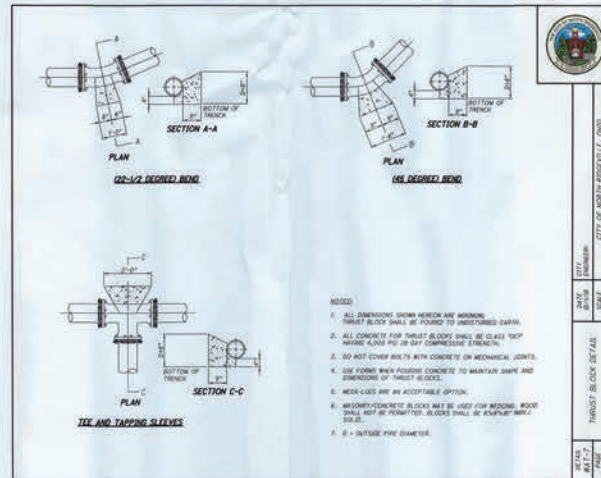
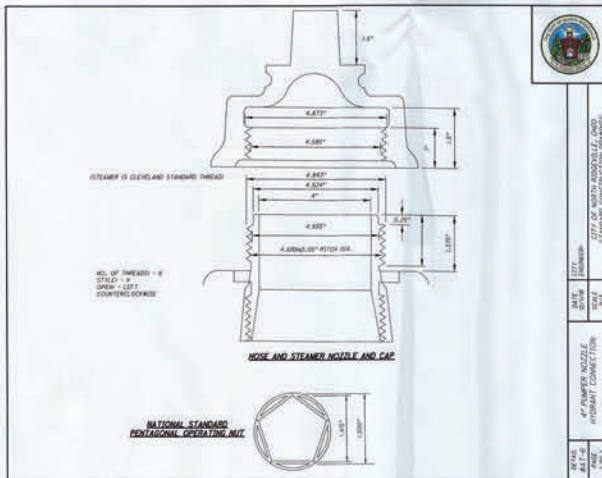
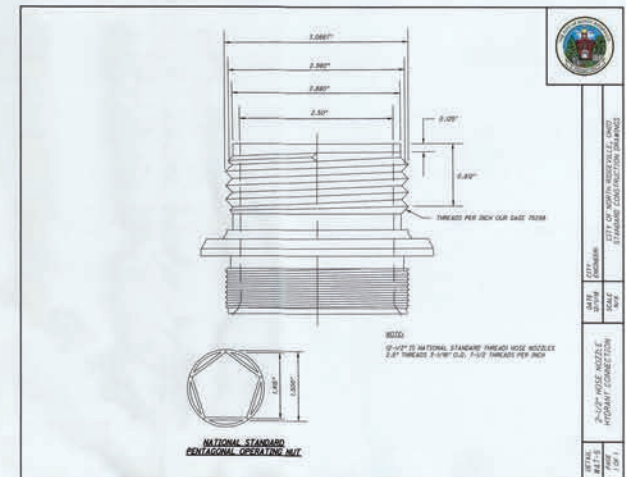
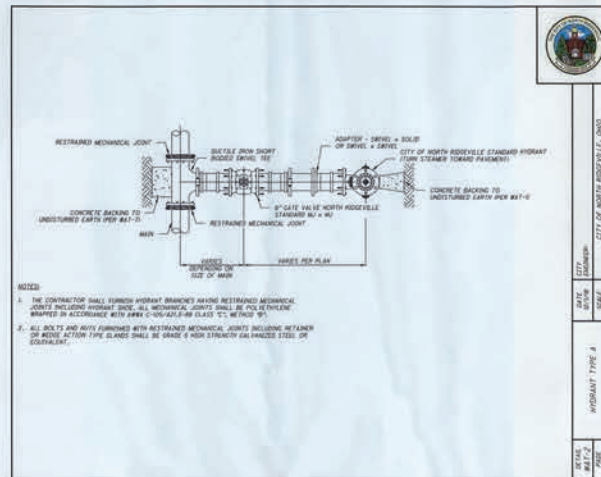
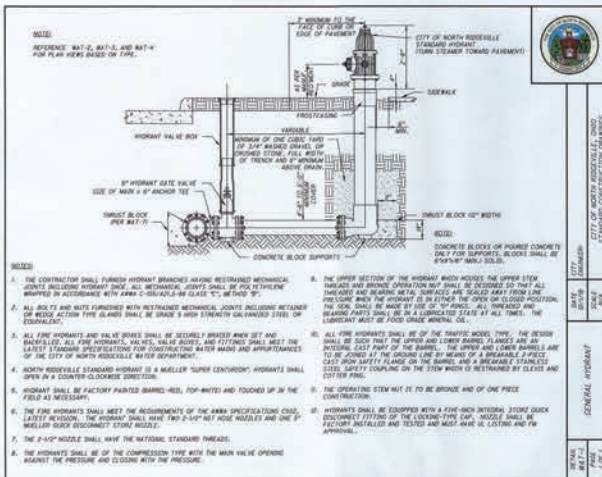
BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
MISCELLANEOUS DETAILS
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C6.1
JOB NO.
22-5800



	DATE	BY	DIVISION:
REVISIONS	8-8-2007	APA	ISSUE TO CLIENT FOR REVIEW
	8-19-2007	APA	ISSUE TO CITY FOR REVIEW

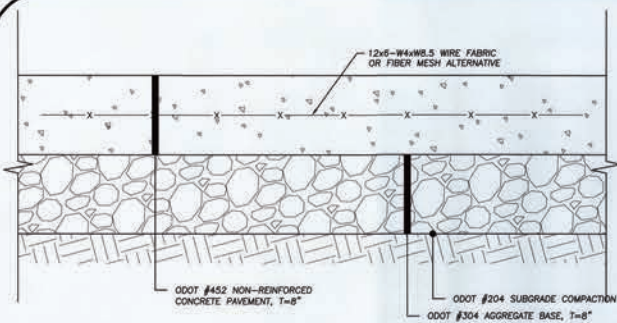
DRAWN BY:
REB

CHECKED BY:
AFA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

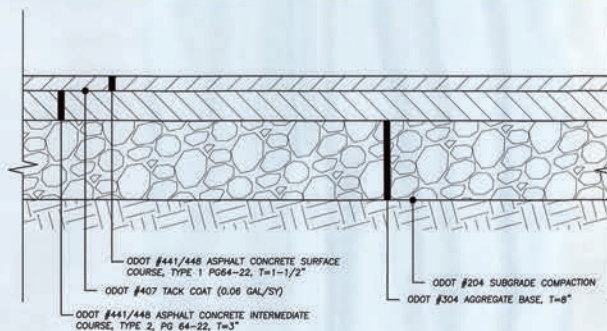
PREPARED FOR: 216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS MISCELLANEOUS DETAILS CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN, STATE OF OHIO		SHEET C6.2 JOB NO. 22-5800
---	--	-------------------------------------



**CONCRETE PAVEMENT SECTION FOR DRIVE APRON,
DUMPSTER PAD & CONCRETE PADS ALONG DRIVE THRU**

- NOT TO SCALE -



ASPHALT PARKING LOT SECTION

- NOT TO SCALE -

PAVEMENT NOTES:

1. NO NATURAL GRAVEL OR SLAG AGGREGATE TO BE ALLOWED AS THE AGGREGATE BASE FOR ASPHALT OR CONCRETE.
2. ASPHALT/CONCRETE PAVEMENT BUILD-UP AND AGGREGATE BASE RECOMMENDATIONS ARE PER THE GEOTECHNICAL REPORT BY SME DATED JULY 15, 2022.

TABLE 5: RESTRICTED ODOT #304 CRUSHED AGGREGATE BASE

SIEVE	SIZE, mm	ODOT ITEM #304 SPECIFICATION		RESTRICTED ODOT ITEM #304 MAX
		MIN	MAX	
2"	50.80	100	—	—
1"	25.00	70	100	100
3/4"	19.00	50	90	90
1/2"	12.70	—	—	75
3/8"	9.50	—	—	65
No. 4	4.75	30	60	40
No. 30	0.60	9	33	15
No. 200	0.075	0	15	6.0

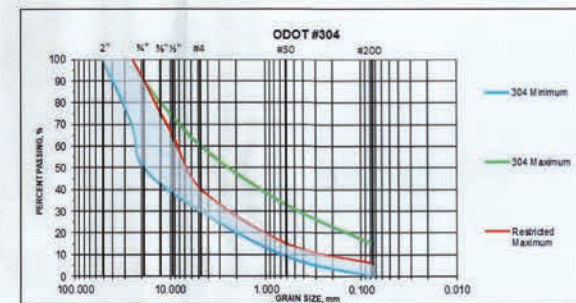
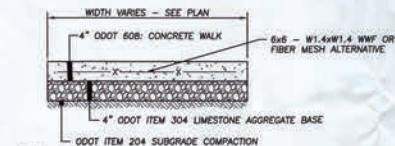


FIGURE 3: ODOT ITEM #304 AND RESTRICTED ODOT #304 MAXIMUM

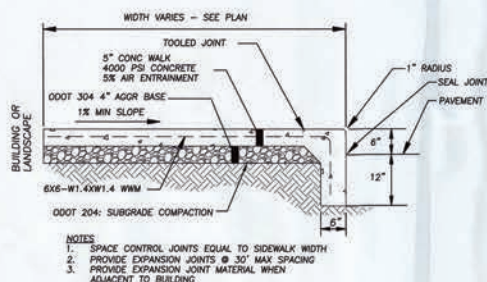
AGGREGATE BASE MATERIAL RECOMMENDATION



- NOTES:**
1. SPACE CONTROL JOINTS EQUAL TO SIDEWALK WIDTH
 2. PROVIDE EXPANSION JOINTS @ 30' MAX SPACING
 3. PROVIDE EXPANSION JOINT MATERIAL WHEN ADJACENT TO BUILDING

**TYPICAL SITE SIDEWALK &
PROPOSED PATIO SECTION**

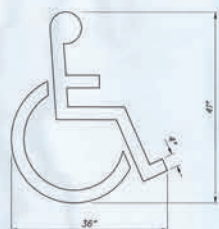
- NOT TO SCALE -



- NOTES:**
1. SPACE CONTROL JOINTS EQUAL TO SIDEWALK WIDTH
 2. PROVIDE EXPANSION JOINTS @ 30' MAX SPACING
 3. PROVIDE EXPANSION JOINT MATERIAL WHEN ADJACENT TO BUILDING

SIDEWALK WITH INTEGRAL CURB

- NOT TO SCALE -



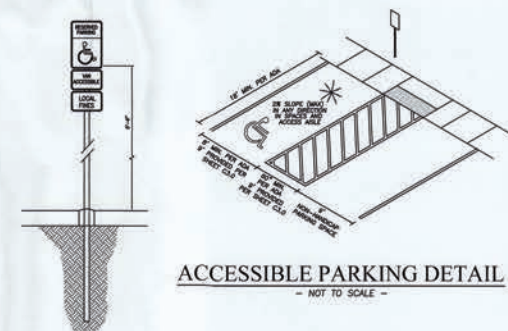
HANDICAP SYMBOL MARKING

- NOT TO SCALE -



HANDICAP PARKING SIGN DETAIL

- NOT TO SCALE -



ACCESSIBLE PARKING DETAIL

- NOT TO SCALE -

HANDICAP PARKING SIGN POST DETAIL

- NOT TO SCALE -

DATE	BY	DESCRIPTION
8-2-2022	APA	ISSUE TO CLIENT FOR REVIEW
8-16-2022	APA	ISSUE TO CITY FOR REVIEW

DRAWN BY: REB	BRAMHALL ENGINEERING AND SURVEYING COMPANY 801 MOORE ROAD AVON, OHIO 44011 (440) 934 - 7878 (440) 934 - 7879 FAX
CHECKED BY: APA	

PREPARED FOR:	216 DIRT HOLDINGS, LLC P.O. BOX 591 RHINELANDER, WI 54501
---------------	---

CULVER'S RESTAURANT IMPROVEMENTS MISCELLANEOUS DETAILS CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN, STATE OF OHIO

SHEET C6.6
JOB NO. 22-5800



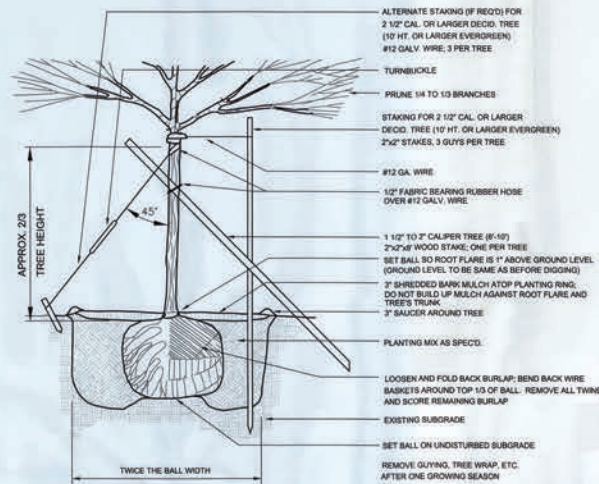
SHEET
L1.0
JOB NO.
17-4656-09A
BSLLC: 22038

LANDSCAPE NOTES

- ALL WORK TO BE IN ACCORDANCE WITH THE ACCEPTED PRACTICES OF THE AMERICAN ASSOCIATION OF LANDSCAPE CONTRACTORS.
- PRIOR TO INSTALLATION, INSPECT THE GENERAL SITE CONDITIONS AND VERIFY THE SUBGRADE, ELEVATIONS, UTILITY LOCATIONS, AND TOPSOIL. NOTIFY THE GENERAL CONTRACTOR OF ANY UNSATISFACTORY CONDITIONS. WORK SHALL NOT PROCEED UNTIL SUCH CONDITIONS HAVE BEEN CORRECTED.
- CONTRACTOR TO LOCATE ALL UTILITIES PRIOR TO ONSET OF WORK AND COORDINATE ACCORDINGLY WITH APPROPRIATE UTILITIES DEPARTMENTS. DO NOT INSTALL TREES WITHIN 4' OF BURIED UTILITY LINES. RELOCATE PLANT MATERIAL SIGHTLY IF NECESSARY. IN THE CASE OF A CONFLICT, NOTIFY LANDSCAPE ARCHITECT.
- DO NOT MAKE SUBSTITUTIONS. IF SPECIFIED LANDSCAPE MATERIAL IS NOT AVAILABLE, CONTACT THE LANDSCAPE ARCHITECT FOR ACCEPTABLE ALTERNATIVE.
- ALL PLANT MATERIAL MUST BE FROM NURSERY SOURCE WITH A HARDINESS ZONE SIMILAR TO THAT OF THE PROJECT SITE. PLANTS SHALL BE TRUE TO GENUS AND SPECIES AS INDICATED ON THE PLANS, COMPLYING WITH AND 285.1 FOR THE TYPES AND FORM OF PLANTS REQUIRED.
- ALL PLANTING BEDS TO RECEIVE 8" DEPTH PLANTING MIX AFTER FINAL GRADE IS ESTABLISHED. ALL SEEDING AREAS TO RECEIVE CLEAN FINE GRADED TOPSOIL, FREE OF ALL ROCKS AND DELETERIOUS DEBRIS. SHRUB AND PERENNIAL PLANTING PITS SHALL RECEIVE PLANTING MIX PER DETAILS, THIS SHEET.
- PROVIDE SHREDED HARDWOOD MULCH 3" DEEP AT ALL PLANTING BEDS, TAKING CARE TO KEEP MULCH AWAY FROM CROWNS AND ROOT FLARES OF ALL PLANTS. CONTRACTOR SHALL SUBMIT MULCH SAMPLES TO OWNER FOR APPROVAL PRIOR TO ORDERING.
- CONTRACTOR TO APPLY STARTER FERTILIZER PER SPECIFICATIONS OR APPROVED SIMILAR FOR ALL LAWN AND PLANTING BEDS.
- FINAL GRADES SHALL BE SMOOTH AND EVEN. PLACEMENT OF PLANTING MATERIALS SHALL NOT AFFECT THE INTENDED DRAINAGE PATTERN OF THE FINAL GRADING PLAN. THIS MAY INCLUDE NOT PLACING PLANT MATERIALS IN SWALES OR CREATING MOUNDS THAT BLOCK THE INTENDED SURFACE DRAINAGE PATTERN. GRADES SHALL SLOPE A MINIMUM OF 2% AWAY FROM STRUCTURES UNLESS OTHERWISE NOTED.
- PROVIDE 4" DEEP SHADE-CUT "V" TRENCH ALONG BED EDGES UNLESS ADJACENT TO PAVEMENT.
- ALL MATERIALS TESTED SHALL BE THE SOLE RESPONSIBILITY OF CONTRACTOR.
- CONTRACTOR SHALL BE RESPONSIBLE FOR ALL COSTS TO PROPERLY WATER PLANT MATERIALS IMMEDIATELY UPON PLANTING.
- PLANT LIST IS PROVIDED FOR REFERENCE ONLY. CONTRACTOR IS RESPONSIBLE FOR VERIFYING PLANT QUANTITIES AND PROVIDING PLANT MATERIAL AS SHOWN ON PLANS.
- CONTRACTOR TO SEED ALL DISTURBED AREAS INCLUDING ADJACENT EXISTING LAWN AREAS THAT ARE IN DISREPAIR. DO NOT BEGIN UNTIL AREA HAS RECEIVED TOPSOIL AND IS AT FINISHED GRADE. SEEDING WORK SHALL RESULT IN A HEALTHY LAWN FREE OF WEEDS. GRASS SEED SHALL BE FRESH, CLEAN, DRY, NEW-CROP SEED, OR APPROVED EQUAL, NOT LESS THAN 95 PERCENT GERMINATION, NOT LESS THAN 95 PERCENT PURE SEED, AND NOT MORE THAN 0.5 PERCENT WEED SEED. SEED SHALL BE PREMIUM QUALITY MIX WITH QUICK GERMINATION RATE OF:
 - 50% BLENDED BLUEGRASS
 - 25% CREEPING RED FESCUE
 - 25% PERENNIAL RYE
 OR APPROVED EQUAL. APPLY AT A RATE OF 5 LBS./1000 SF.

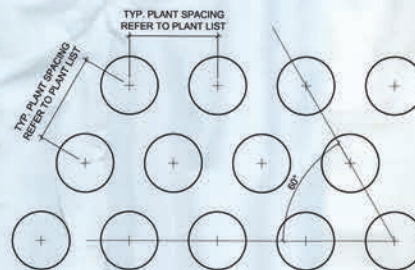
PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	SIZE	COND.	NOTES/ SPACING	QTY
TREES						
QU EL	QUERCUS ELLIPSOIDALIS	NORTHERN PIN OAK	2 1/2" CAL.	B&B		2
SY RE	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK TREE LILAC	2 1/2" CAL.	B&B		2
UL FR	ULMUS 'FRONTIER'	FRONTIER ELM	2 1/2" CAL.	B&B		2
SHRUBS						
BU WO	BURUS x SINICA 'WINTERGREEN'	WINTERGREEN BOXWOOD	NO. 3	CONT.	48" O.C.	37
HY PA	HYDRANGEA PANCULATA 'PINK DIAMOND'	PINK DIAMOND PANICLE HYDRANGEA	18" HT.	NO. 3 CONT.		3
JI SC	JUNIPERUS SCOPULORUM 'MOONGLOW'	MOONGLOW JUNIPER	8" HT.	B&B		3
NO RD	ROSA 'RED DRIFT'	RED DRIFT ROSE	18" HT. NO. 3	CONT.	36" O.C.	25
SP GM	SPIRAEA x 'GOLDMOUND'	GOLDMOUND SPIRAEA	NO. 3	CONT.	36" O.C.	14
TH OC	THUJA OCCIDENTALIS 'EMERALD'	EMERALD ARBORVITAE	4" HT.	B&B	42" O.C.	8
PERENNIALS AND GRASSES						
CA KF	CALAMAGROSTIS x AULIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	CLUMP	CONT.	30" O.C.	28
FE OV	FERTUCA GLAUCA 'ELIJAH BLUE'	ELIJAH BLUE FESCUE		CONT.	12"	16
HE HR	HEMEROCALLIS 'HAPPY RETURNS'	HAPPY RETURNS DAYLILY	1 GAL.	CONT.	18" O.C.	37
NE FA	NEPETA x FAASSENII 'WALKER'S LOW'	WALKER'S LOW CATMINT	NO. 2	CONT.	30" O.C.	18
SEED FOR LAWN (SEE NOTES FOR MIX)						



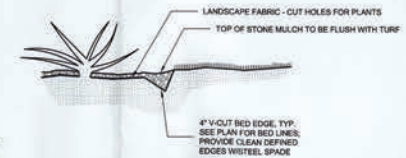
TREE PLANTING DETAIL

NTS



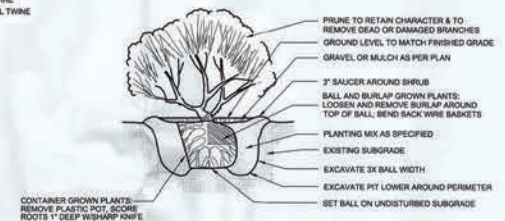
MASS PLANTING TYPICAL LAYOUT

NTS



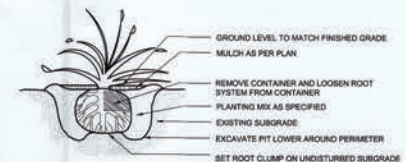
MULCH AND BED EDGE DETAIL

NTS



SHRUB PLANTING DETAIL

NTS



PERENNIAL PLANTING DETAIL

NTS

PREPARED BY:



BOULEVARD STUDIOS LLC
LANDSCAPE ARCHITECTURE + LAND PLANNING

582 VALLEY BROOK LANE MACEDONIA, OH 44056
TEL: 440-821-7704 WWW.BOULEVARD-STUDIOS.COM

DRAWN BY:
YFCM

CHECKED BY:
CM

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:

THE RICHARD E. JACOBS GROUP, LLC
2425 CENTER RIDGE ROAD
CLEVELAND, OHIO 44145-4122
(440) 871-4800

NEW CULVER'S RESTAURANT
LANDSCAPE PLAN
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN, STATE OF OHIO

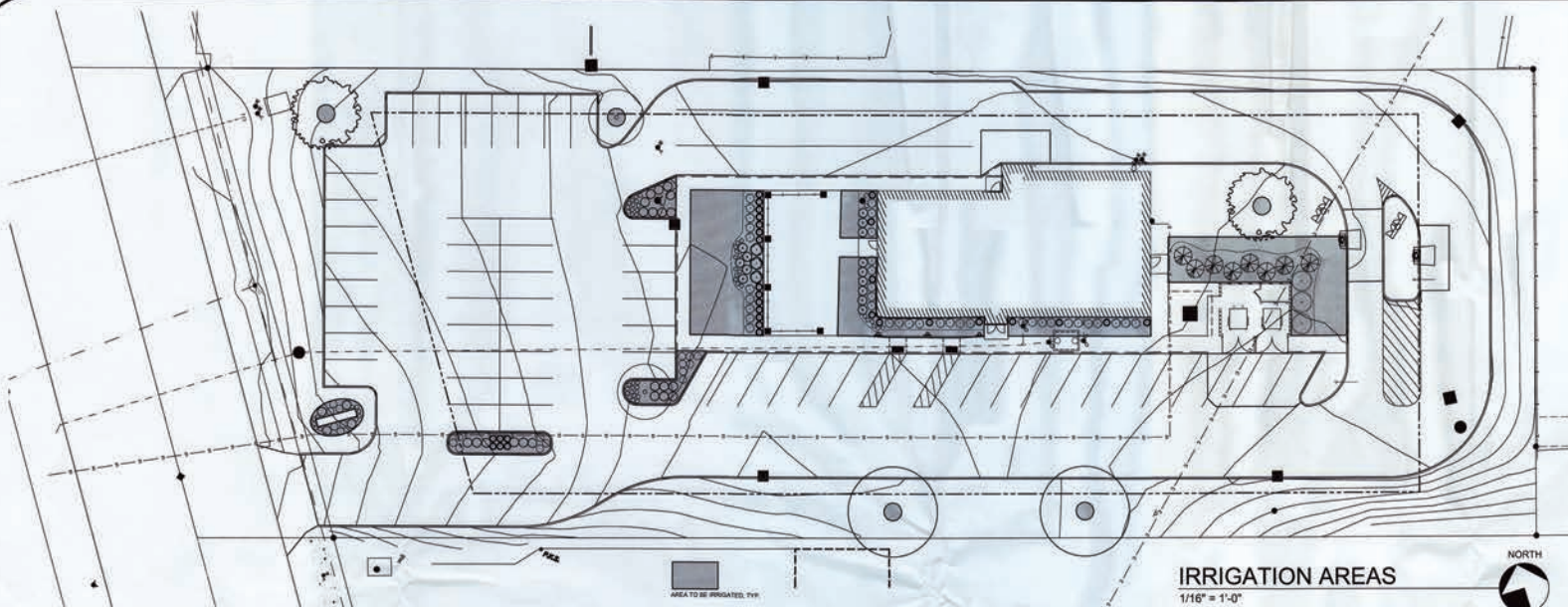
SHEET

L1.1

JOB NO.

17-4656-09A

BSLLC: 22038



IRRIGATION AREAS

1/16" = 1'-0"



IRRIGATION NOTES

PROVIDE AN UNDERGROUND IRRIGATION SYSTEM AS SPECIFIED FOR THE AREAS INDICATED ON THE DRAWINGS. THE WORK INCLUDES:

1. AUTOMATIC IRRIGATION SYSTEM, INCLUDING PIPING, PRESSURE REGULATION, BACK-FLOW PREVENTION FITTINGS, SPRINKLER HEADS, AND ACCESSORIES AS INDICATED.
2. VALVES, VALVE BOXES AND FITTINGS.
3. CONTROLLER, CONTROL WIRE AND UNDERGROUND WIRE SPLICES.
4. TESTING.
5. EXCAVATING AND BACK FILLING IRRIGATION SYSTEM WORK.
6. ASSOCIATED PLUMBING AND ACCESSORIES TO COMPLETE THE SYSTEM.

AREAS INDICATED ON PLAN ARE TO RECEIVE IRRIGATION. EXACT LOCATIONS OF PIPING, SPRINKLER HEADS, VALVES, AND OTHER COMPONENTS SHALL BE ESTABLISHED BY CONTRACTOR AND VERIFIED IN THE FIELD AT THE TIME OF INSTALLATION. THE CONTRACTOR IS RESPONSIBLE FOR ADEQUATE COVERAGE OF ALL AREAS TO BE IRRIGATED. THE CONTRACTOR SHALL RESTORE OR MODIFY SHOPPING CENTER IRRIGATION ON THE WEST AND SOUTH SIDES (SEE PLAN) TO ACHIEVE COVERAGE, AVOIDING OVERSPRAY ONTO PAVEMENT AREAS.

PREPARED BY:



BOULEVARD STUDIOS LLC
LANDSCAPE ARCHITECTURE • LAND PLANNING

982 VALLEY BROOK LANE WACLEDONIA, OH 44095
TEL: 440-821-7704 WWW.BOULEVARD-STUDIOS.COM

SUBMIT MANUFACTURER'S PRODUCT DATA SPECIFICATIONS FOR EACH OF THE SYSTEM COMPONENTS. SUBMIT SHOP DRAWINGS FOR THE IRRIGATION SYSTEM INCLUDING PIPING LAYOUT AND DETAILS ILLUSTRATING LOCATION AND TYPES OF SPRINKLER HEADS, VALVES, CONTROL SYSTEMS AND WIRING, AND SPRINKLER HEAD FITTINGS. SHOW SPRINKLER HEAD COVERAGE. SUBMIT THE SYSTEM WARRANTY.

UPON IRRIGATION SYSTEM ACCEPTANCE SUBMIT WRITTEN OPERATING AND MAINTENANCE INSTRUCTIONS.

COORDINATE NEW SLEEVES THAT MUST BE PLACED UNDER PROPOSED PAVEMENT BEFORE PAVEMENT IS INSTALLED. SEE PLAN FOR LOCATIONS. IF CONCRETE OR ASPHALT ALREADY EXISTS, THEN INSTALL BY BORING OR HYDRAULIC DRIVING OF THAT SLEEVE.

VERIFY WITH LOCAL WATER DEPARTMENT FOR PROPER WATER METER CONNECTIONS BEFORE INSTALLING. THEN INSTALL AS PER DRAWING OR TO LOCAL CODE.

THE MAIN IRRIGATION COMPONENTS SHALL BE MANUFACTURED BY THE FOLLOWING IRRIGATION COMPANIES OR EQUAL WITH APPROVAL FROM THE ARCHITECT TWO WEEKS PRIOR TO BID DATE: HUNTER, RAINBIRD, TORO, JOHN DEERE OR APPROVED EQUAL. ITEMS SHALL BE PURCHASED THROUGH AN AUTHORIZED IRRIGATION

DISTRIBUTOR.

PROVIDE ONLY NEW MATERIALS WITHOUT FLAWS OR DEFECTS, AND OF THE HIGHEST QUALITY OF THEIR SPECIFIED CLASS AND KIND.

COMPLY WITH PIPE SIZES INDICATED ON SHOP DRAWINGS. NO SUBSTITUTION OF SMALLER PIPES WILL BE PERMITTED. THE CONTRACTOR MAY USE LARGER SIZES SUBJECT TO ACCEPTANCE. REMOVE IMMEDIATELY FROM SITE DAMAGED AND DEFECTIVE PIPE.

PROVIDE PIPE CONTINUOUSLY AND PERMANENTLY MARKED WITH MANUFACTURER'S NAME OR TRADEMARK, SIZE SCHEDULE AND TYPE OF PIPE, WORKING PRESSURE AT 73 DEGREES F. AND NATIONAL SANITATION FOUNDATION (NSF) APPROVAL.

EXAMINE FINAL GRADES AND INSTALLATION CONDITIONS. DO NOT START IRRIGATION SYSTEM WORK UNTIL UNSATISFACTORY CONDITIONS ARE CORRECTED.

LAY OUT AND STAKE THE LOCATION OF EACH PIPE RUN AND ALL SPRINKLER HEADS AND SPRINKLER VALVES. OBTAIN ENGINEER'S ACCEPTANCE OF LAYOUT PRIOR TO EXCAVATING.

EXCAVATE TRENCHES OF SUFFICIENT DEPTH AND WIDTH TO PERMIT PROPER HANDLING AND INSTALLATION OF PIPE FITTINGS. EXCAVATE TO DEPTHS REQUIRED TO PROVIDE 2" DEPTH OF EARTH FILL OR

SAND BEDDING FOR PIPING WHEN ROCK OR OTHER UNSUITABLE BEARING MATERIALS IS ENCOUNTERED. FILL TO MATCH ADJACENT GRADE ELEVATIONS WITH APPROVED EARTH FILL MATERIAL. PLACE AND COMPACT FILL IN LAYERS NOT GREATER THAN 6" DEPTH.

INSTALL IRRIGATION MAINS WITH A MINIMUM COVER OF 16" BASED ON FINISH GRADES. INSTALL LATERALS WITH A MINIMUM COVER OF 10" BASED ON FINISHED GRADES.

EXCAVATE TRENCHES AND INSTALL PIPING AND BACKFILL DURING THE SAME WORKING DAY. DO NOT LEAVE OPEN TRENCHES OR PARTIALLY BACK FILLED TRENCHES OPEN OVERNIGHT.

INSTALL PLASTIC PIPE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS. PROVIDE FOR THERMAL EXPANSION AND CONTRACTION. INSTALL FITTINGS, VALVES, SPRINKLER HEADS, RISERS AND ACCESSORIES IN ACCORDANCE WITH MANUFACTURER'S INSTRUCTIONS.

INSTALL ELECTRIC CONTROL CABLE IN THE PIPING TRENCHES WHEREVER POSSIBLE. PLACE WIRE IN TRENCH ADJACENT TO PIPE. INSTALL WIRE WITH SLACK TO ALLOW FOR THERMAL EXPANSION AND CONTRACTION. EXPANSION JOINTS IN WIRE MAY BE PROVIDED AT 200-FOOT INTERVALS BY MAKING 5-6 TURNS OF THE WIRE AROUND A PIECE OF 1/2" PIPE INSTEAD OF SLACK. WHERE NECESSARY TO RUN WIRE IN A SEPARATE TRENCH, PROVIDE A MINIMUM COVER OF 10".

IRRIGATION CONTROLLER SHALL BE IN A METAL LOCKING CABINET. IT SHALL HAVE 2 INDEPENDENT PROGRAMS THAT CAN ALSO RUN CONCURRENTLY. STATION WATERING TIME CAN BE INCREASED IN 1-MINUTE INCREMENTS, FROM 1 TO 99 MINUTES. IT WILL ALSO HAVE A WATER BUDGET FROM 1 TO 200%. A MINIMUM OF THREE START TIMES WILL BE REQUIRED. WHEN IN OPERATION A LED LIGHT OR DISPLAY WILL SHOW WHAT STATION IS OPERATING. CONTROLLER SHALL HAVE A 6 OR 14 DAY CALENDAR FOR PROGRAMMING WATERING DAYS. THE CONTROLLER SHALL HAVE REAL-TIME BATTERY BACK-UP FOR A MINIMUM OF 1 WEEK, AND HAVE NON-VOLATILE MEMORY FOR THE PROGRAM. THIS CONTROLLER SHALL HAVE SELF-DIAGNOSTIC CIRCUITRY.

PROVIDE A RAIN SENSOR THAT INTERRUPTS THE CIRCUIT FROM THE CONTROLLER IN THE EVENT OF RAIN, AND AUTOMATICALLY RESETS ITSELF TO ALLOW FULL FUNCTION OF IRRIGATION SYSTEM.

PROVIDE A 1-YEAR WRITTEN WARRANTY AGAINST INSTALLATION AND OPERATION DEFECTS AND A TWO- (2) YEAR MANUFACTURER'S WARRANTY ON MAIN SPRINKLER COMPONENTS. REPAIRS, ADJUSTMENTS AND REPLACEMENT OF DEFECTIVE IRRIGATION SYSTEM MATERIALS, INCLUDING MATERIALS INSTALLED ON THE WORK DURING THE WARRANTY PERIOD SHALL BE AT THE CONTRACTOR'S EXPENSE.

DATE	BY	DESCRIPTION

DRAWN BY:
JCM

CHECKED BY:
CM

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:

THE RICHARD E. JACOBS GROUP, LLC
2425 CENTER RIDGE ROAD
CLEVELAND, OHIO 44145-4122
(440) 871-4800

NEW CULVER'S RESTAURANT
LANDSCAPE PLAN
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN, STATE OF OHIO

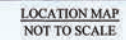
SHEET
L1.1
JOB NO.
17-4636-09A
BSLLC: 22038



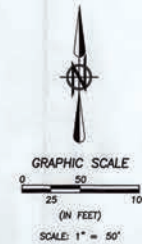
Statistics						
Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
AREA OUTSIDE OF BOUNDRY	+	0.0 fc	0.5 fc	0.0 fc	N/A	N/A
PARKING LOT	+	1.9 fc	5.0 fc	0.5 fc	10.0:1	3.8:1

Schedule						
Symbol	Label	Image	Quantity	Catalog Number	Description	Wattage
	OC1		1	DSX1 LED P9 40K TSW HVOLT	18" POLE, BASE 2' ABOVE GRADE	241
	OC5		1	DSX1 LED P5 40K TSW HVOLT	18" POLE, BASE 2' ABOVE GRADE	138
	OE3		4	DSX1 LED P2 40K BLC HVOLT	18" POLE, BASE 2' ABOVE GRADE	70
	OE5		4	DSX1 LED P1 40K BLC HVOLT	18" POLE, BASE 2' ABOVE GRADE	54

SITUATED IN THE CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO AND KNOWN AS BEING PART OF ORIGINAL
RIDGEVILLE TOWNSHIP LOT NUMBERS 3 & 4



●	5/8" x 30" IRON REBAR WITH CAP STAMPED "BRAMHALL 8073" SET
X _{SHK}	DRILLHOLE SET
○	IRON PW/PIPE FOUND AS INDICATED
●	5/8" x 30" IRON REBAR WITH CAP STAMPED "BRAMHALL 8073" FOUND
SK	MONUMENT BOX WITH IRON PW/PIPE FOUND AS INDICATED
R (REC.)	RECORD INFORMATION
M (MEAS.)	MEASURED INFORMATION
C (CALC.)	CALCULATED INFORMATION
U (USED)	USE INFORMATION
CALC.REC.	CALCULATED FROM RECORD INFORMATION
(N.)	NORTH
(S.)	SOUTH
(E.)	EAST
(W.)	WEST
C _{CL}	CENTERLINE
R _W	RIGHT-OF-WAY LINE
P _L	PROPERTY LINE
T.P.O.B.	TRUE PLACE OF BEGINNING
P.O.C.	POINT OF COMMENCEMENT
L _A	LOCAL ACCESS



A PORTION OF THE CENTERLINE
OF LORAIN ROAD WHICH WAS
ASSUMED TO BE S 42°03'52" W
AS SURVEYED IN JUNE & JULY :

THIS SURVEY WAS PERFORMED IN ACCORDANCE WITH SECTION 4733-37 OF THE OHIO ADMINISTRATIVE CODE "STANDARDS FOR BOUNDARY SURVEYS"

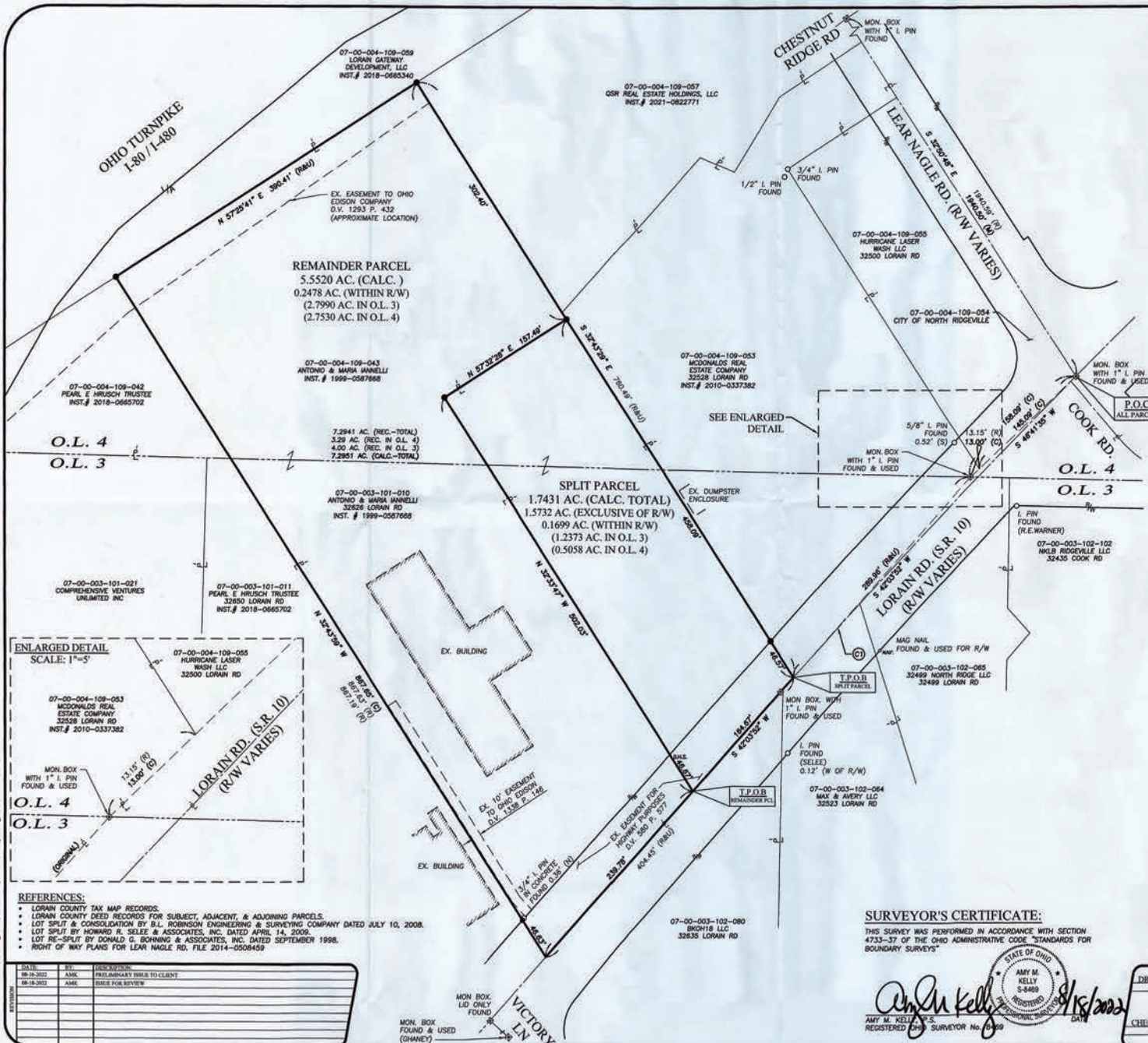


DRAWN BY
CAT

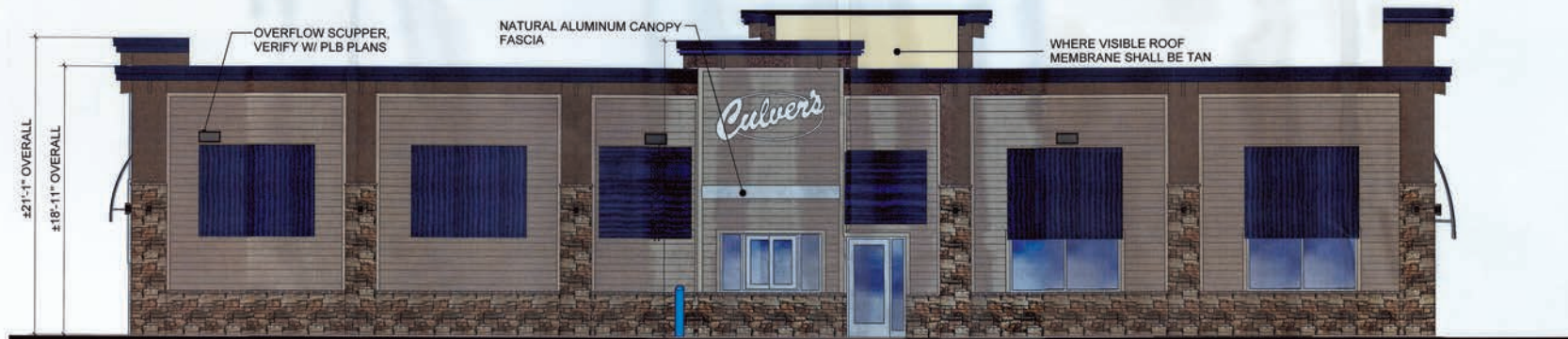
CHECKED BY
AMK

BRAMHALL
ENGINEERING AND SURVEYING CO., INC.
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

SHEET
1 of 1
JOB NO.
22-5800



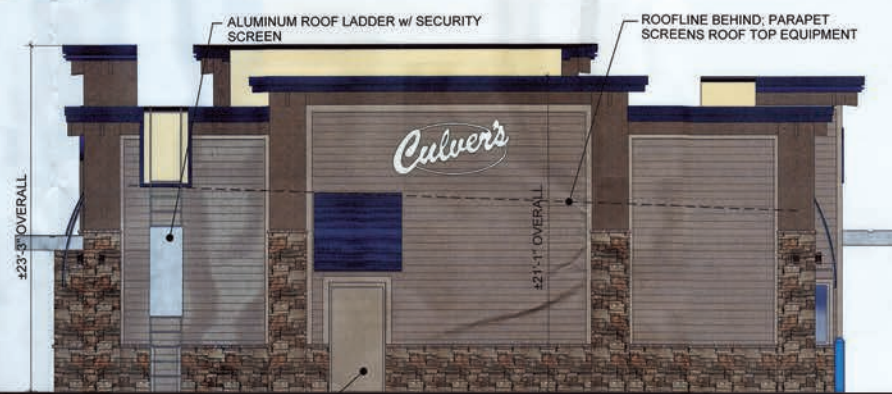
11/22/2020 Culvers North Ridgeville DRAWINGS.22-5800 Lot Split.dwg, 8/18/2022 1:39:39 PM



DRIVE THRU ELEVATION



FRONT ELEVATION



REAR ELEVATION

EXTERIOR HOLLOW METAL SHALL BE PAINTED TO MATCH SIDING



MAIN ENTRY ELEVATION

REPRESENTATION	MATERIAL	COLOR
ROOF EDGE	EXCEPTIONAL METALS	"HARBOR BLUE"
ACCENT EIFS		"TIKI HUT" SW7509
CANVAS AWNINGS (BY OTHERS)		"ROYAL BLUE" 4617
JAMES HARDIE FIBER CEMENT SIDING		"KHAKE BROWN"
MFG'D STONE w/ STONE SILL TRIM (ENVIRONMENTAL STONEWORKS)		"ASPEN NICKEL CREEK" TUSCAN LEDGE

TYPICAL FINISHES AND COLORS ARE SHOWN. OWNER'S FINAL SELECTIONS MAY VARY.



REAR LEFT VIEW (NEC)



REAR RIGHT VIEW (SEC)



FRONT LEFT (NWC)



FRONT RIGHT VIEW (SWC)



LEFT PERSPECTIVE (NORTH VIEW)



RIGHT PERSPECTIVE (SOUTH VIEW)

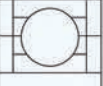
TYPICAL FINISHES AND COLORS ARE SHOWN.
OWNER'S FINAL SELECTIONS MAY VARY.



NEW CULVER'S RESTAURANT
32574 Lorain Road
North Ridgeville, OH 44039
County of Lorain



OLLMANN ASSOCIATES
ARCHITECTS
200 South State Street
Beverly Hills, Illinois 61008
615-544-7790 Phone



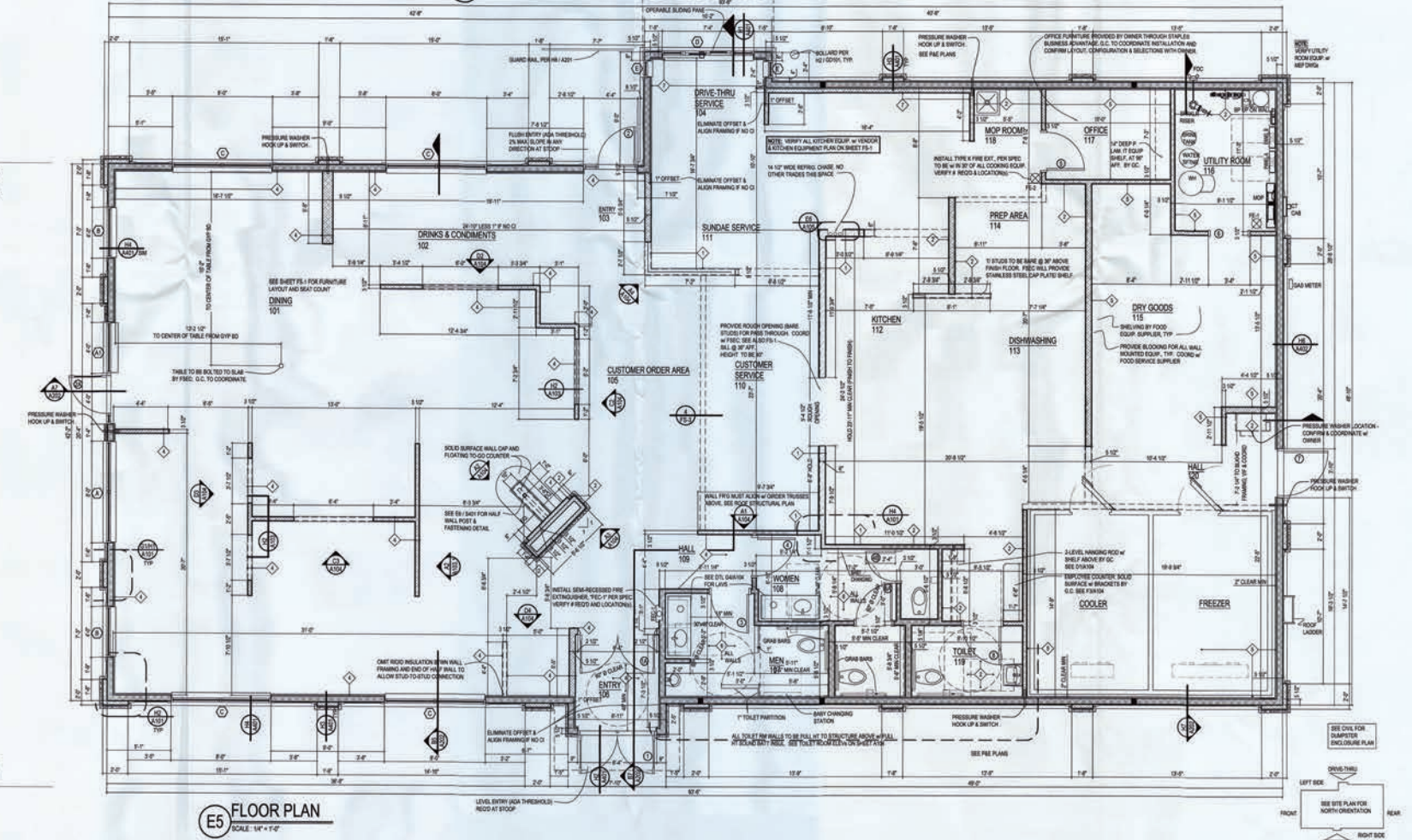
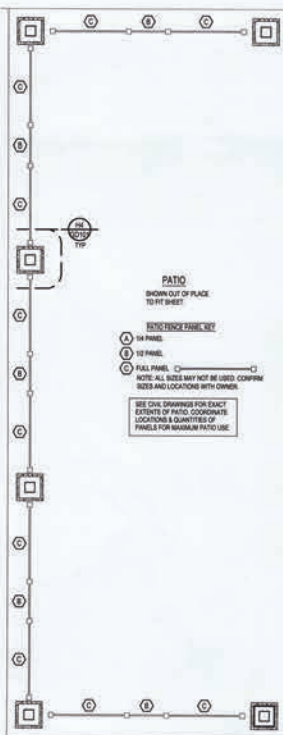
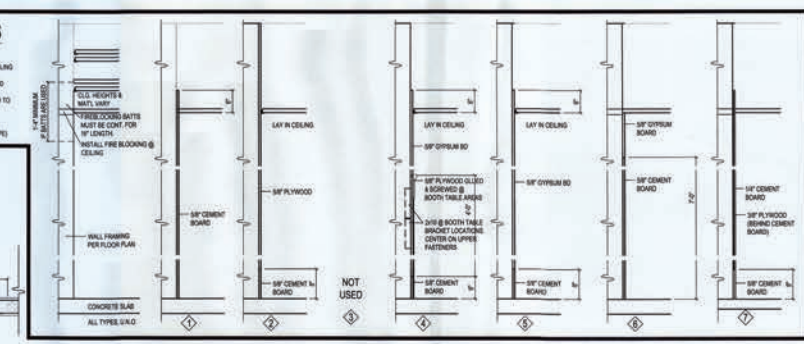
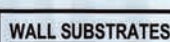
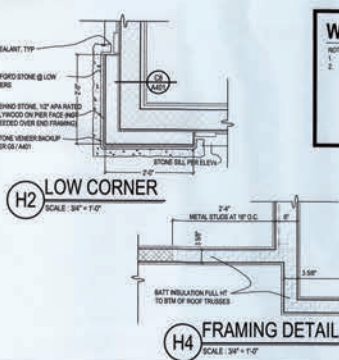
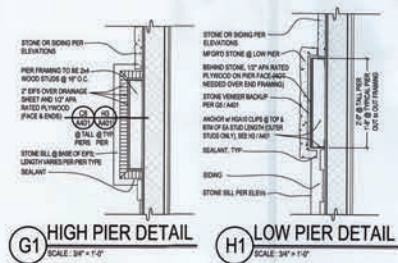
ELEVATIONS
NOTE: THOUGH THESE IMAGES HAVE PHOTO
REALISTIC QUALITIES, THE ACTUAL BUILDING
MATERIALS MAY VARY IN APPEARANCE.
Date: 8-18-2022 Revision:

2022-052



SYMBOL LIBRARY

DINING	ROOM NAME
701	ROOM NUMBER
	NON INCL. WOOD STUCCO WALL
	INDICATED WOOD STUCCO WALL
	NON INCL. METAL STUCCO WALL
	INDICATED METAL STUCCO WALL
	NON ELECTRICAL PANEL (FIREMANS SYSTEM)
	MASONRY PER WALL SECTION
	MANUFACTURED STONE VENEER
	WINDOW TYPE
	DOOR NUMBER
	DETAIL NUMBER
	SHEET NUMBER
	DETAIL NUMBER
	SHEET NUMBER





Technical drawings of the Gate Series showing three views: Side View 1, Side View 2, and Gate View.

- SIDE VIEW 1:** Shows the side profile of the gate with a textured finish. Labels include:
 - ALUMINUM OR GATE CONTROL JOINT
 - BENDING TO MATCH BULB
 - SHOULDER TO BENDING TO MATCH BULB
 - SYNTHETIC WOOD FINISH TO MATCH GATE FRAME, PAINT TO MATCH EYES
- SIDE VIEW 2:** Shows the side profile of the gate with a textured finish. Labels include:
 - ALUMINUM OR GATE CONTROL JOINT
 - BENDING TO MATCH BULB
 - SHOULDER TO BENDING TO MATCH BULB
 - SYNTHETIC WOOD FINISH TO MATCH GATE FRAME, PAINT TO MATCH EYES
- GATE VIEW:** Shows the front view of the gate with a textured finish. Labels include:
 - ALUMINUM OR GATE CONTROL JOINT
 - BENDING TO MATCH BULB
 - SHOULDER TO BENDING TO MATCH BULB
 - SYNTHETIC WOOD FINISH TO MATCH GATE FRAME, PAINT TO MATCH EYES
 - BOTTOM OF GATE FRAME & FACING IS TO BE A MINIMUM OF 1" ABOVE GRADE TO ALLOW FOR DRAIN THROUGH DRAINAGE
 - DRAIN BOLTS, 12" PER LEAF

NOTE: REFER TO VARIOUS NOTES FOR MAXIMUM SPACING OF CONTROL JOINTS

SHEAR LUG

1" JOINT W/ SEALANT & BACKER ROD

COMPRESS MORTAR @ ALL TOLDED JOINTS

1" JOINT W/ SEALANT & BACKER ROD

CONC. BLOCKS PER PLAN

H2 BOLLARD
SCALE: 3/4" = 1'-0"



Labels in the diagram include:

- TWO 1/2 LONG C-CH CHANNEL, WELDED TO WIRE BOLLS; ONE AT TOP & ONE AT BOTT
- C-CH FIT, JUNE CHANNEL, WELDED TO HORIZONTAL CHANNEL
- THREE C-CH FIT, HORIZONTAL CHANNELS, MIDDLE TOP WELDED TO HORIZONTAL CHANNELS
- CLOSURE PLATE AND DRAINAGE STRIP
- C-CH FIT, JUNE CHANNEL, WELDED TO HORIZONTAL CHANNEL
- CLOSURE PLATE AND DRAINAGE STRIP
- C-CH FIT, JUNE CHANNEL, WELDED TO HORIZONTAL CHANNEL
- CLOSURE PLATE AND DRAINAGE STRIP

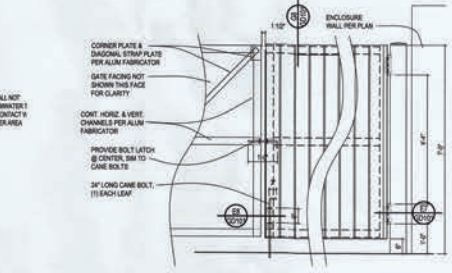
CWS 815 JAMB CHANNEL
WELDED TO HORIZONTAL CHANNEL
WELD ON FASTENER EYE BOLT
SCOUTCHORN TO JAMB CHANNEL

[illegible]

H6 ENCLOSURE WALL
SCALE: 3/4" = 1'-0"



H6 ENCLOSURE WALL
SCALE: 3/4" = 1'-0"



H7 ENCLOSURE GATE ELEV
SCALE: 1/2" = 1'-0"

FEATURES & SPECIFICATIONS

INTENDED USE

Provides years of maintenance-free illumination for outdoor use in residential & commercial applications. Ideal for applications such as lighting walkways and stairways for safety and security.

CONSTRUCTION

Cast-aluminum housing with corrosion-resistant paint in either dark bronze or white finish.

ADA compliant.

OPTICS

4000K CCT LEDs.

Polycarbonate lens protects the LED from moisture, dirt and other contaminants.

LUMEN MAINTENANCE: The LED will deliver 70% of its initial lumens at 50,000 hour average LED life. See Lighting Facts label on page 2 for performance details.

ELECTRICAL

MVOLT driver operates on any line voltage from 120-277V

Operating temperature -30°C to 40°C.

1KV surge protection standard.

INSTALLATION

Surface mounts to universal junction box (provided by others).

LISTINGS

UL Listed to U.S. and Canadian safety standards for wet locations.

Tested in accordance with IESNA LM-79 and LM-80 standards.

WARRANTY — 5-year limited warranty. Complete warranty terms located at www.acuitybrands.com/CustomerResources/Terms_and_conditions.aspx

Actual performance may differ as a result of end-user environment and application.

All values are design or typical values, measured under laboratory conditions at 25 °C.

Note: Specifications subject to change without notice.

Catalog Number
Notes
Type

Outdoor General Purpose

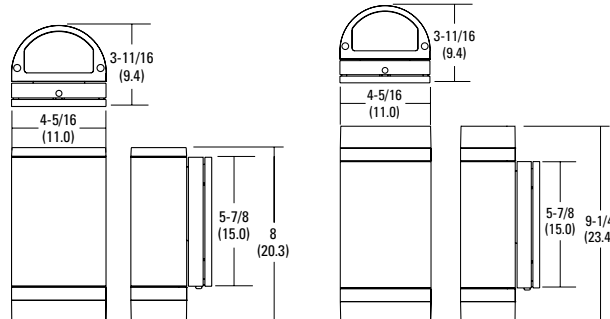
OLLWD & OLLWU

LED WALL CYLINDER LIGHT



Specifications

All dimensions are inches (centimeters)



ORDERING INFORMATION

For shortest lead times, configure products using **bolded options**.

Example: OLLWD LED P1 40K MVOLT DDB

Series	Performance Package	Color temperature (CCT)	Voltage	Finish
OLLWD LED Downlight	P1	40K 4000K	MVOLT 120V-277V	DDB Dark bronze
OLLWU LED Up & downlight			120 120V ¹	WH White

Notes

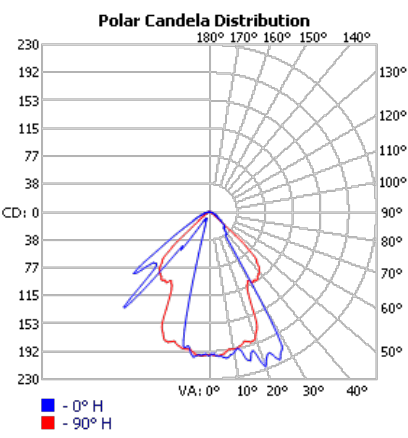
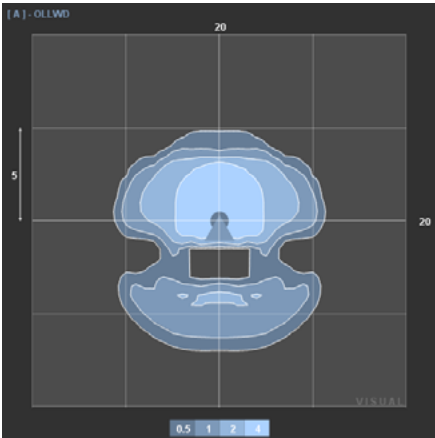
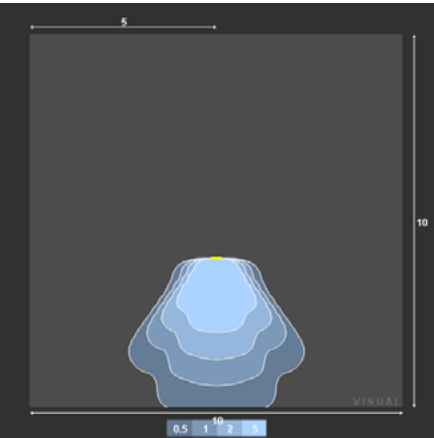
1 Only available with OLLWU and in DDB.

OLLWD & OLLWU LED Wall Cylinder Light

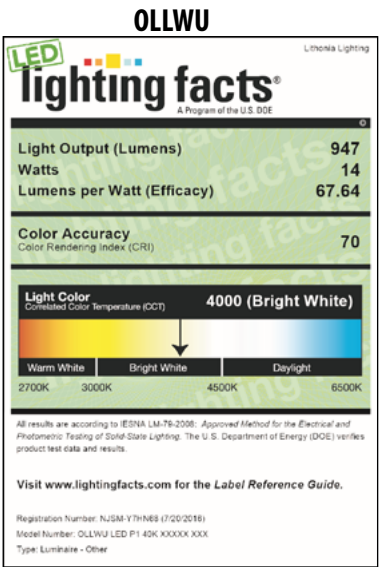
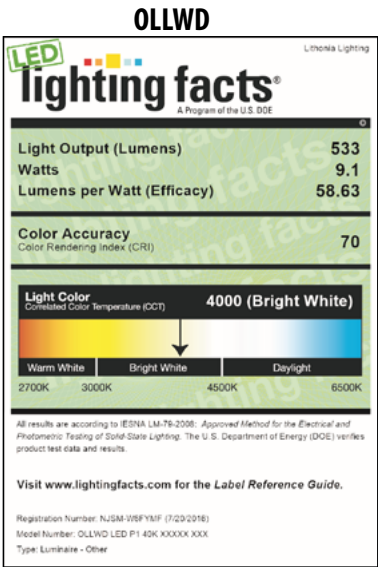
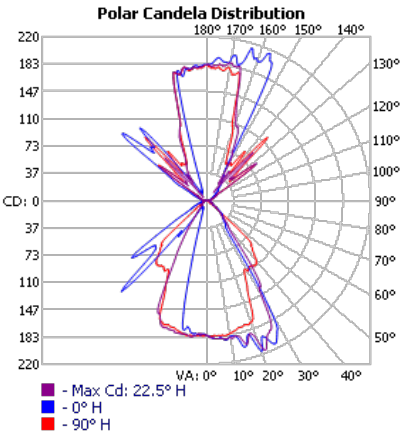
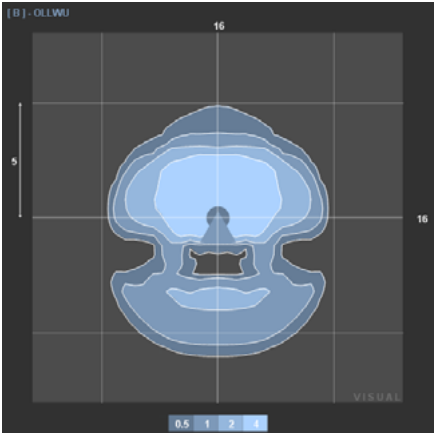
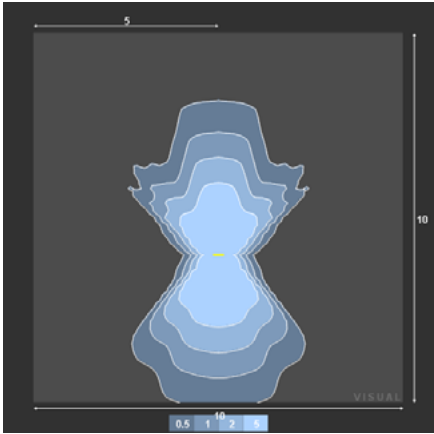
PHOTOMETRICS

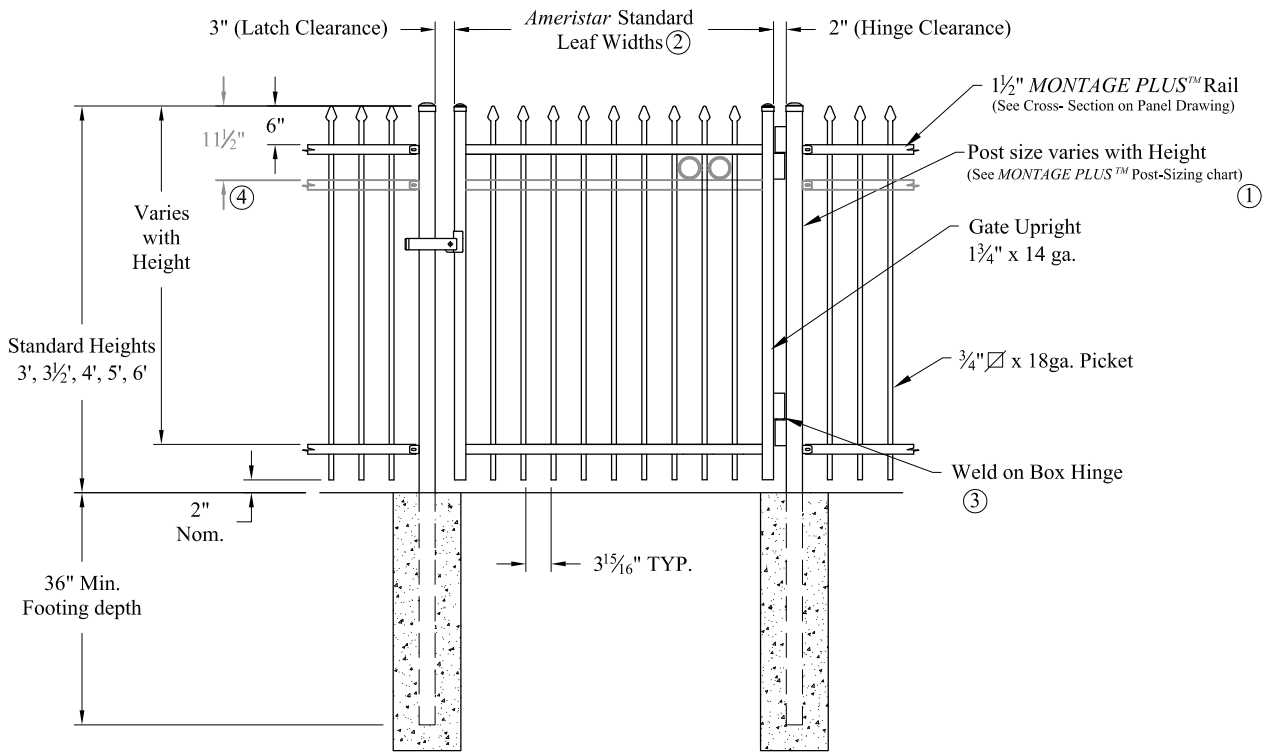
To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's Outdoor LED homepage
Tested in accordance with IESNA LM-79 and LM-80 standards.

OLLWD



OLLWU

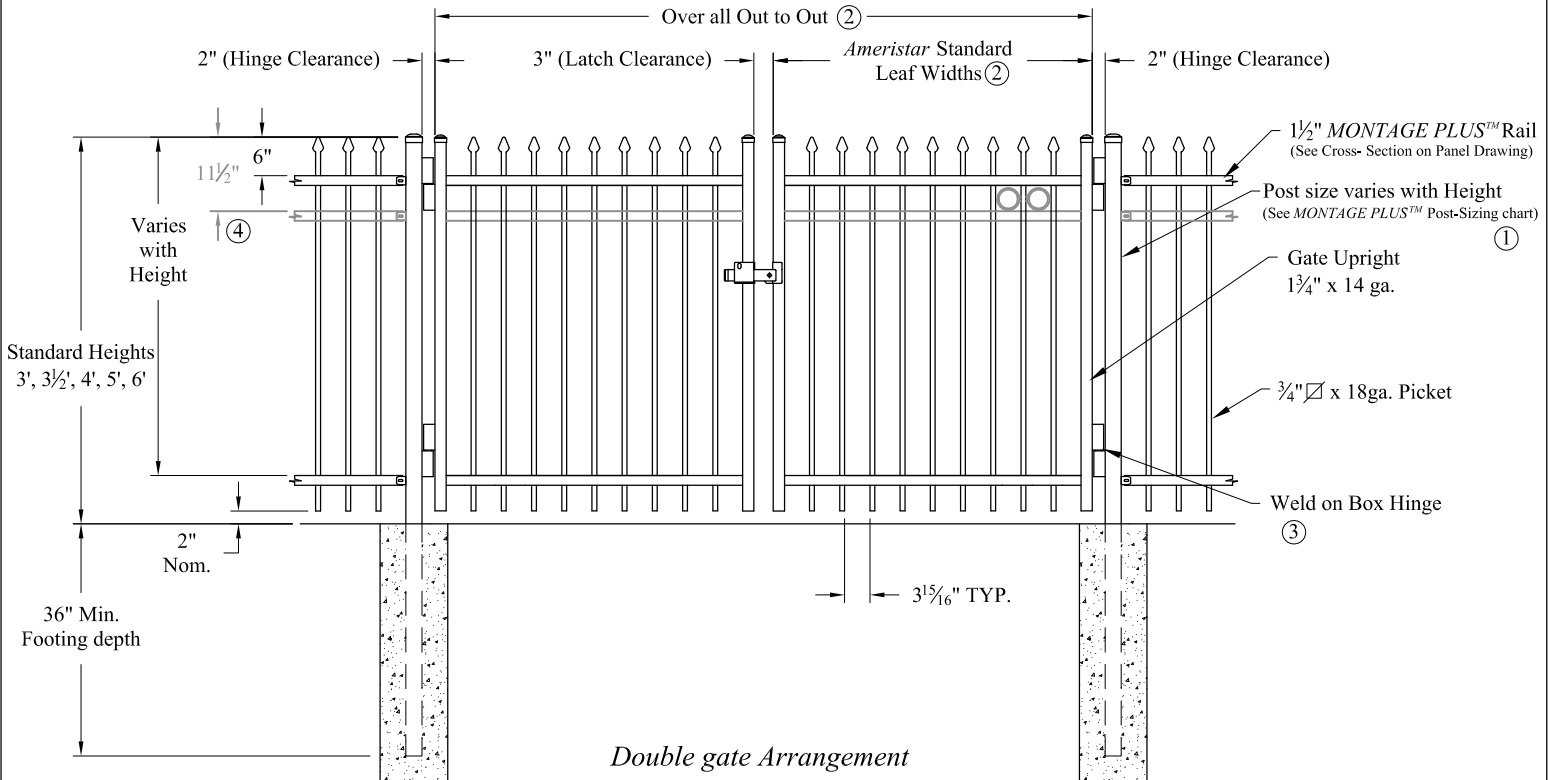




NOTES:

Single gate Arrangement

- 1.) Post size depends on fence height, weight and wind loads. See MONTAGE PLUS™ specifications for post sizing chart.
- 2.) See Ameristar gate table for standard out to outs. Custom gate openings available for special out to out/leaf widths.
- 3.) Additional styles of gate hardware are available on request. This could change the Latch & Hinge Clearance.
- 4.) Third rail required for Double Rings.



Double gate Arrangement

COMMERCIAL STRENGTH WELDED STEEL GATE

Values shown are nominal and not to be used for installation purposes. See product specification for installation requirements.

IRCISOG

Title: **MONTAGE PLUS CLASSIC 2/3-RAIL SGL & DBL GATE**

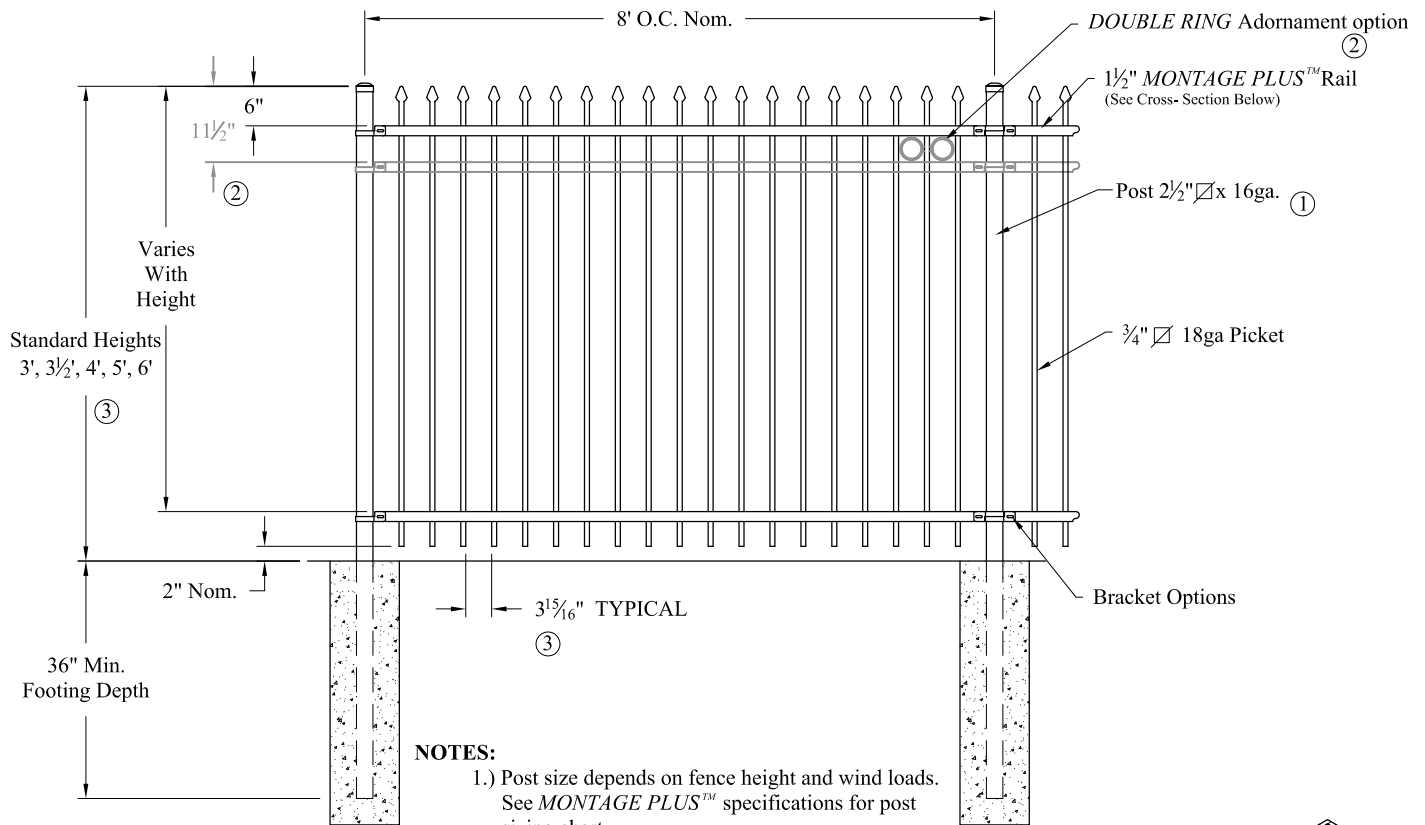
DR: CI SH . 1 of 1 SCALE: DO NOT SCALE

CK: ME Date 6/28/10 REV: e



AMERISTAR®

1555 N. Mingo
Tulsa, OK 74116
1-888-333-3422
www.ameristarfence.com

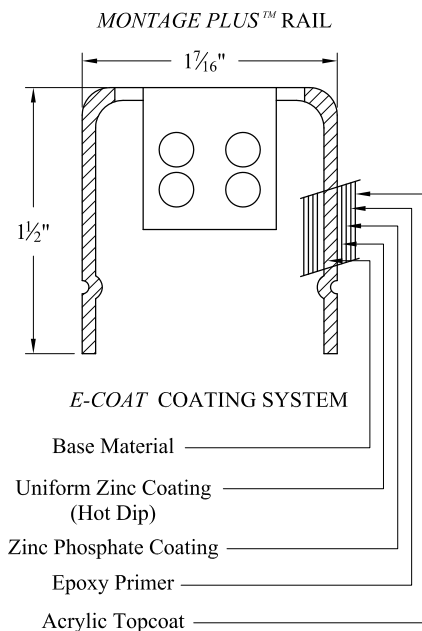


NOTES:

- 1.) Post size depends on fence height and wind loads. See *MONTAGE PLUS™* specifications for post sizing chart.
- 2.) Third rail required for *Double Rings*.
- 3.) Available in 3" air space and/or Flush Bottom on most heights.

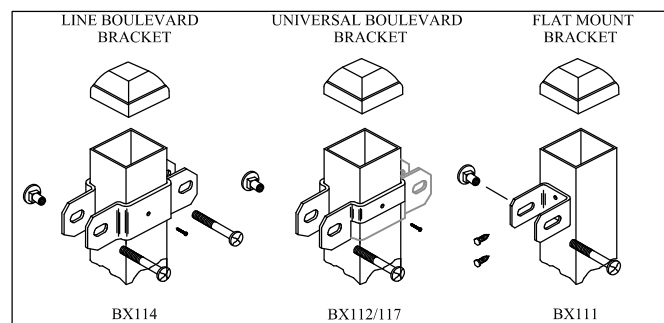
RAKING DIRECTIONAL ARROW

Welded panel can be raked 30" over 8' with arrow pointing down grade.



PROFUSION™ WELDING PROCESS
No exposed welds,
Good Neighbor profile - Same
appearance on both sides

MONTAGE PLUS™ RAIL
Specially formed high strength
architectural shape.



**COMMERCIAL STRENGTH WELDED STEEL PANEL
PRE-ASSEMBLED**

Title: **MONTAGE PLUS CLASSIC 2/3-RAIL**

DR: CI SH . 1 of 1 SCALE: DO NOT SCALE

CK: ME Date 6/28/10 REV: e



AMERISTAR®

1555 N. Mingo
Tulsa, OK 74116
1-888-333-3422
www.ameristarfence.com

Values shown are nominal and not to be used for installation purposes. See product specification for installation requirements.

IRCISO

MONTAGE PLUS[®]



ORNAMENTAL STEEL FENCE

Montage Plus ornamental steel fence has the *versatility to fit many different project applications*. With its ability to *traverse varying grades*, variety of *distinct product styles* and unmatched coating performance, Montage Plus is the *preferred choice for ornamental fence*.



PRIMARY APPLICATIONS

- **Commercial Developments**
- **Self Storage**
- **Apartments (Multi-Family)**
- **Parks & Recreation**
- **Schools & Universities**



FENCE PRODUCTS

AMERISTARFENCE.COM | 888-333-3422

ASSA ABLOY, the global leader in door opening solutions

AMERISTAR[®]

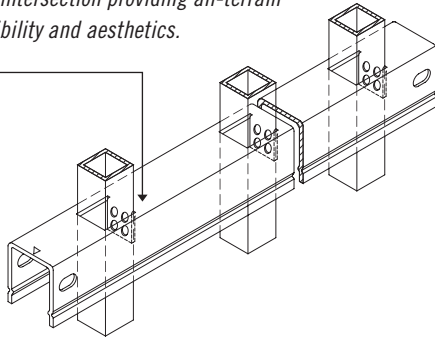
ASSA ABLOY

MONTAGE PLUS®

ORNAMENTAL STEEL FENCE

.75"sq x 18ga PICKETS | 1.4375" x 1.5" x 14ga RAILS | 2.5"sq x 16ga POSTS

Each picket is precisely welded at each rail intersection providing all-terrain flexibility and aesthetics.

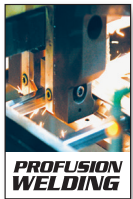


STYLE OPTIONS



Also available in Pool, Pet & Play (3" air spacing) – styles vary

PROFUSION WELDED STEEL



All Montage fence panels are fabricated using Ameristar's ProFusion welding process. This technique combines laser and fusion technology to create a virtually invisible structural connection at every picket to rail intersection. Unlike typical aluminum fence systems that are held together with unsightly screws, the ProFusion weld used with Montage promotes a "good neighbor" profile with sleek lines and no exposed picket to rail fasteners. When compared to aluminum fencing, Montage's welded steel construction is unmatched in strength and durability.



E-COAT™ PROTECTIVE FINISH

Montage galvanized steel framework is subjected to a multi-stage pre-treatment/wash (with zinc phosphate), followed by a duplex cathodic electrocoat system consisting of an epoxy primer, which significantly increases corrosion protection, and an acrylic topcoat, which provides the protection necessary to withstand adverse weathering effects. This process results in years of maintenance-free ownership.



20 YEAR LIMITED WARRANTY

The Montage families of fencing products are manufactured from superior quality materials by skilled craftsmen with the highest standards of workmanship in the industry. Ameristar is confident in offering Montage with a 20 year limited warranty.



DOMESTIC MANUFACTURING

Ameristar is committed to providing products that are manufactured in the USA. We have made significant investments in technology, process improvement, and employee training in an effort to secure American jobs and combat inferior import products.

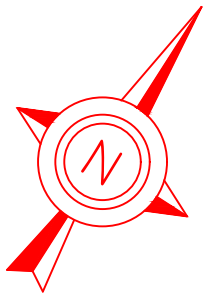
#DMP | REVISED 05/2014



FENCE PRODUCTS

TO PLACE YOUR ORDER CALL 888-333-3422

VISIT AMERISTARFENCE.COM



OHIO TURNPIKE (R/W VARIES)

EXISTING SOUTH RIGHT OF
WAY OHIO TURNPIKE

EXISTING TOP OF BANK

110.51'

109.75'

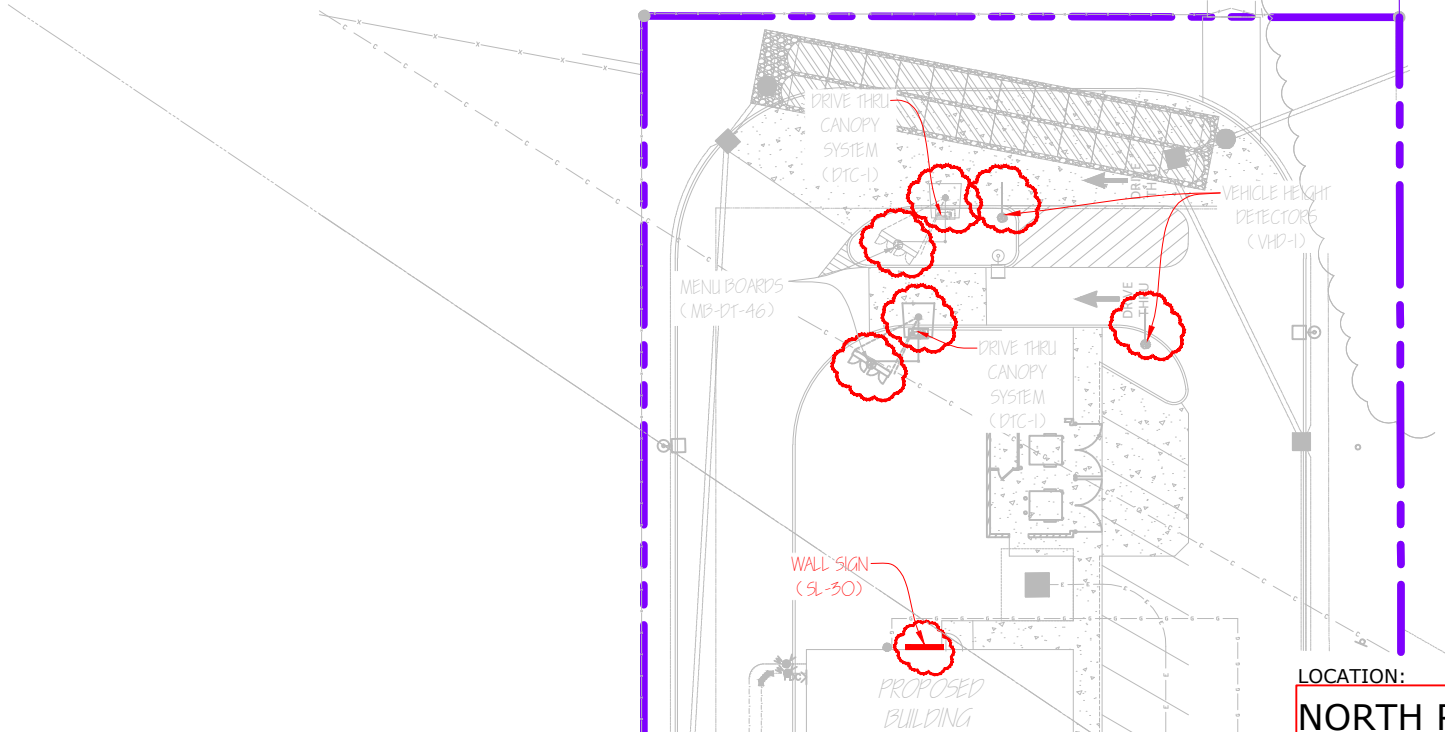
32.24'

5.14'

PROPOSED FREESTANDING
PYLON SIGN (PE-135)

10' EASEMENT

33.05'



LOCATION:
NORTH RIDGEVILLE, OH.

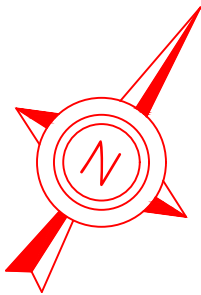
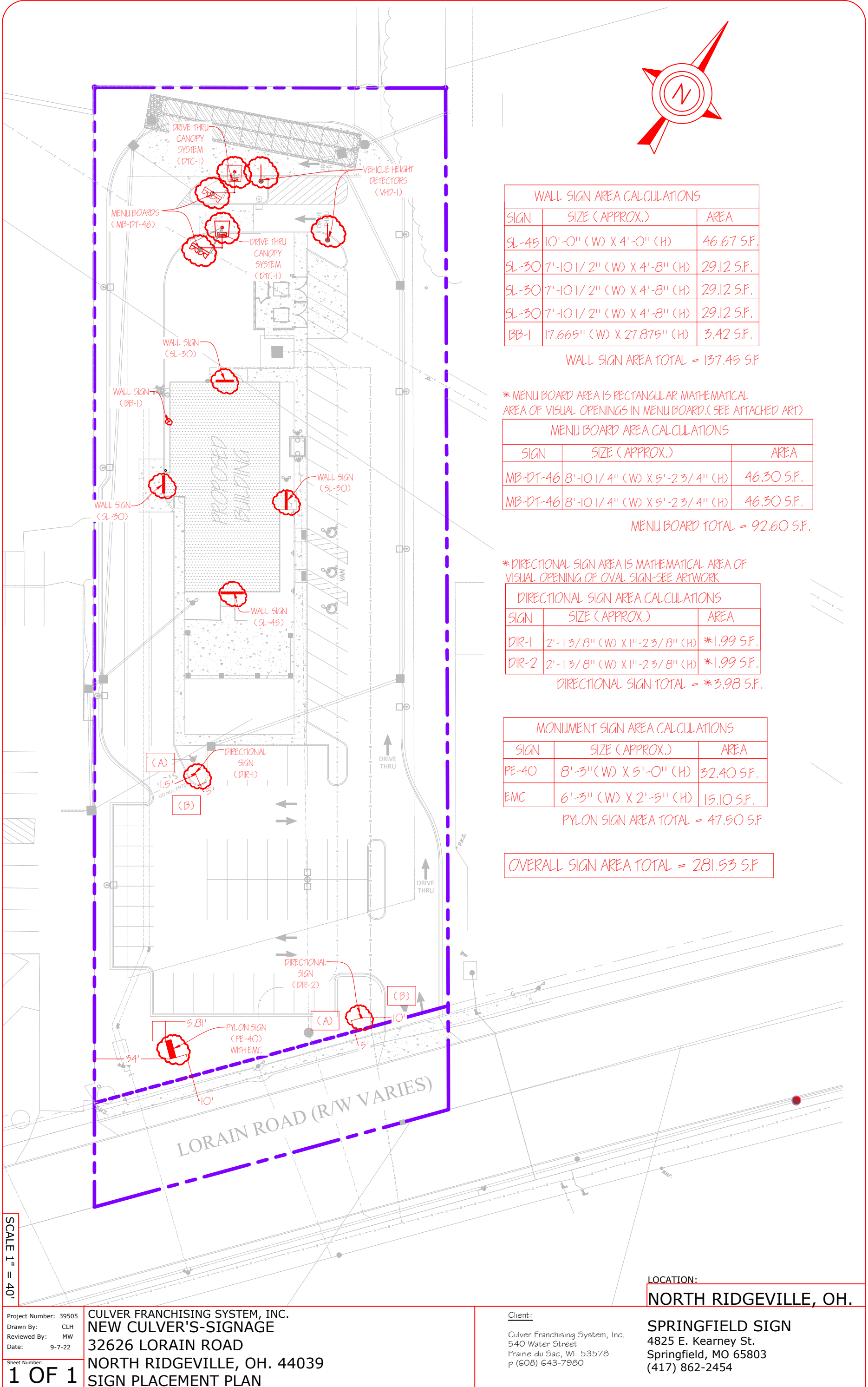
SCALE 1" = 40'

Project Number: 39505
Drawn By: CLH
Reviewed By: MW
9-7-22

CULVER FRANCHISING SYSTEM, INC.
NEW CULVER'S-SIGNAGE
32626 LORAIN ROAD
NORTH RIDGEVILLE, OH. 44039
SIGN PLACEMENT PLAN

Client:
Culver Franchising System, Inc.
540 Water Street
Prairie du Sac, WI 53578
p (608) 643-7980

SPRINGFIELD SIGN
4825 E. Kearney St.
Springfield, MO 65803
(417) 862-2454



WALL SIGN AREA CALCULATIONS		
SIGN	SIZE (APPROX.)	AREA
SL-45	10'-0" (W) X 4'-0" (H)	46.67 S.F.
SL-30	7'-10 1/2" (W) X 4'-8" (H)	29.12 S.F.
SL-30	7'-10 1/2" (W) X 4'-8" (H)	29.12 S.F.
SL-30	7'-10 1/2" (W) X 4'-8" (H)	29.12 S.F.
BB-1	17.665" (W) X 27.875" (H)	3.42 S.F.

WALL SIGN AREA TOTAL = 137.45 S.F

* MENU BOARD AREA IS RECTANGULAR MATHEMATICAL AREA OF VISUAL OPENINGS IN MENU BOARD.(SEE ATTACHED ART)

MENU BOARD AREA CALCULATIONS		
SIGN	SIZE (APPROX.)	AREA
MB-DT-46	8'-10 1/4" (W) X 5'-2 3/4" (H)	46.30 S.F.
MB-DT-46	8'-10 1/4" (W) X 5'-2 3/4" (H)	46.30 S.F.

MENU BOARD TOTAL = 92.60 S.F.

* DIRECTIONAL SIGN AREA IS MATHEMATICAL AREA OF VISUAL OPENING OF OVAL SIGN-SEE ARTWORK

DIRECTIONAL SIGN AREA CALCULATIONS		
SIGN	SIZE (APPROX.)	AREA
DIR-1	2'-1 3/8" (W) X 1"-2 3/8" (H)	*1.99 S.F.
DIR-2	2'-1 3/8" (W) X 1"-2 3/8" (H)	*1.99 S.F.

DIRECTIONAL SIGN TOTAL = *3.98 S.F.

MONUMENT SIGN AREA CALCULATIONS		
SIGN	SIZE (APPROX.)	AREA
PE-40	8'-3" (W) X 5'-0" (H)	32.40 S.F.
EMC	6'-3" (W) X 2'-5" (H)	15.10 S.F.

PYLON SIGN AREA TOTAL = 47.50 S.F

OVERALL SIGN AREA TOTAL = 281.53 S.F

LOCATION:
NORTH RIDGEVILLE, OH.

Project Number: 39505
Drawn By: CLH
Reviewed By: MW
Date: 9-7-22

CULVER FRANCHISING SYSTEM, INC.
NEW CULVER'S-SIGNAGE
32626 LORAIN ROAD
NORTH RIDGEVILLE, OH. 44039
SIGN PLACEMENT PLAN

Sheet Number:
1 OF 1

Client:
Culver Franchising System, Inc.
540 Water Street
Prairie du Sac, WI 53578
p (608) 643-7980

SPRINGFIELD SIGN
4825 E. Kearney St.
Springfield, MO 65803
(417) 862-2454



SIGN PACKAGE PROPOSAL

NEW BUILD

PRESENTED TO:

Culver's - North Ridgeville, OH
32626 Lorain Rd
North Ridgeville, OH 44039

DATE PREPARED:

09/06/22 - Preliminary

AD-1 ADDRESS NUMBERS

NORTH RIDGEVILLE, OH

Routed Address Numbers

AD-1

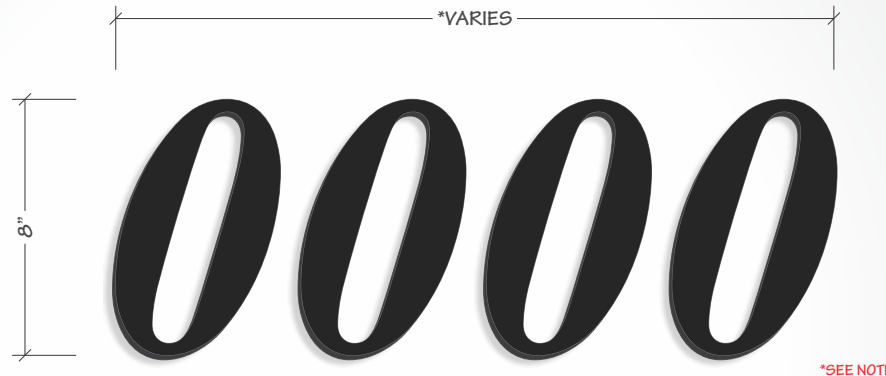
Address letters as required for building occupancy

Size & quantity may vary

Stud/adhesive mounting

1/2" thick, black XPVC

NOTE: Address to be verified with G.C. prior to mfg.



*SEE NOTE

SCALE: 1" = 6'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

TYPICAL INSTALLATION

*SEE NOTE



SCALE: 1/8" = 1'

NOTES

SALES PERSON:
MARK WESSELL

DESIGNED BY:
R. HICKS

A0:
39505

DATE CREATED / REVISION HISTORY

09/06/22 - NEW

FILE PATH: T:\Cyrious\Doc\Order\39000\o39505

Culver's

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



ENVIRONMENTALLY RESPONSIBLE



SPRINGFIELD SIGN

www.springfieldsign.com

BB-1 BUTTERBURGER PANEL

NORTH RIDGEVILLE, OH

ButterBurger Outdoor Panel Wall Sign

BB-1

All aluminum 0.080" thick panel -
backside is blank (white)

Baked on aluminum white enamel
finish

Digital print overlay with
overlamine

Rounded corners are to be 1.25"
radius

Sign is to be mounted at 50 degree
angle (set by flange)

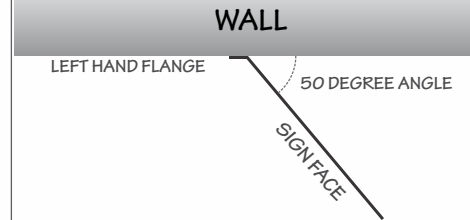


* Determined by physical address numbers

SCALE: 1-1/2" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

TYPICAL INSTALLATION - TOP VIEW



SCALE: N.T.S

HOLE PATTERN

HOLES ARE .250" DIAMETER
.737" IN FROM SIDE & 1.488" IN FROM TOP & BOTTOM
TAB IS TO BE BENT 50 DEGREES UP AT LINE

NOTES

SALES PERSON:	DESIGNED BY:	A0:
MARK WESSELL	R HICKS	39505

DATE CREATED / REVISION HISTORY	
09/06/22 - NEW	

FILE PATH: T:\Cyrius\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduces, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



SPRINGFIELD SIGN
www.springfieldsign.com

DIR DIRECTIONAL SIGNS

NORTH RIDGEVILLE, OH

Illuminated Directional Signs

DIR

All aluminum construction

LED internal illumination

Totally self contained lighting

Polycarbonate thermoformed faces

Face removal for service

Site plans show placement & field orientation

UL marked product



DIRECTIONAL SIGN 1
DIR-D10-D12



SIDE: A



SIDE: B

NOT FOR
PRELIMINARY
CONSTRUCTION

DIRECTIONAL SIGN 2
DIR-D8-D9



SIDE: A

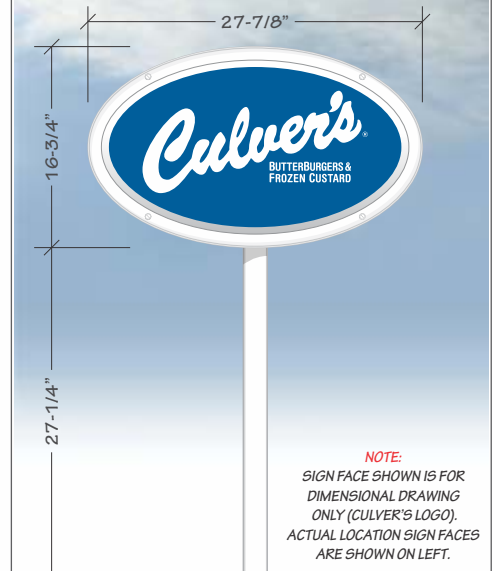


SIDE: B

SCALE: 3/4" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

SIGN CONCEPTUAL



NOTES

SQUARE FOOTAGE CALCULATIONS:
MATHEMATICAL: 2.55 SF
RECTANGULAR: 3.24 SF

5 SF PER DIRECTIONAL MAX

SALES PERSON:
MARK WESSELL

DESIGNED BY:
R. HICKS

A0:
39505

DATE CREATED / REVISION HISTORY

09/06/22 - NEW

FILE PATH: T:\Cyrius\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



ENVIRONMENTALLY
RESPONSIBLE



SPRINGFIELD SIGN

www.springfieldsign.com

FCO-3 INTERIOR SIGN

NORTH RIDGEVILLE, OH

FCO Interior Sign with City & State

FCO-3

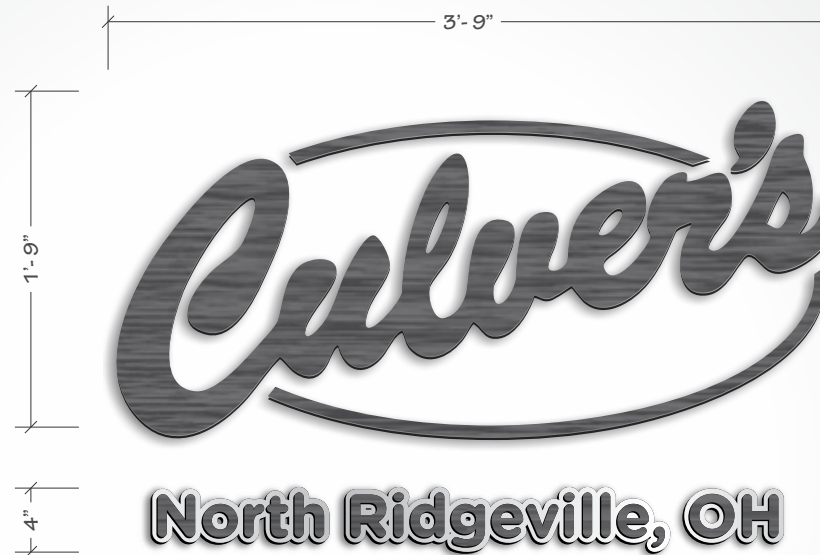
0.25" painted aluminum plate

Routed to shape

Pin mounted for rough surface application

VHB tape for smooth wall application

Mounting pattern with fastener instructions



NOT FOR
PRELIMINARY
CONSTRUCTION



0.25" PAINTED
ALUMINUM PLATE

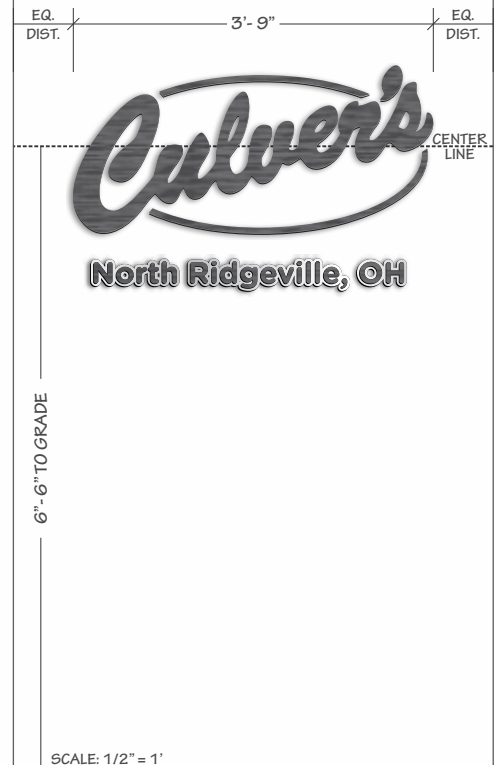


0.25" PAINTED
ALUMINUM PLATE

SCALE: 1" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

SIGN PLACEMENT



SCALE: 1/2" = 1'

SALES PERSON:	DESIGNED BY:	A0:
MARK WESSELL	R. HICKS	39505

DATE CREATED / REVISION HISTORY	
09/06/22 - NEW	

FILE PATH: T:\Cyrious\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



ENVIRONMENTALLY
RESPONSIBLE



SPRINGFIELD SIGN

www.springfieldsign.com

ELEVATION WALL SIGNS

NORTH RIDGEVILLE, OH

SL-45 & SL-30 Illuminated White Script Channel Letters

SL-SERIES

Channel letter construction

One piece (saddle capped sections)

LED internal illumination

Typical application for new construction

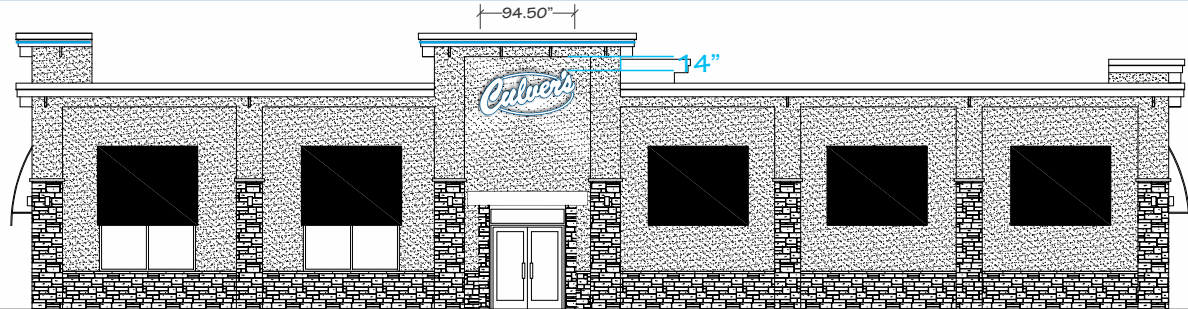
Embedded power supplies

UL marked product

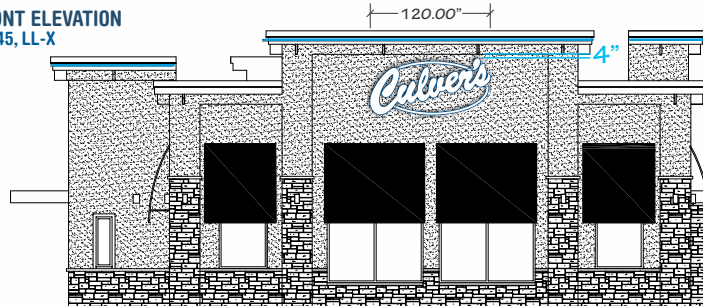
No install pattern needed, level line scribed in back of sign

Culver's

MAIN ELEVATION
SL-30, LL-X

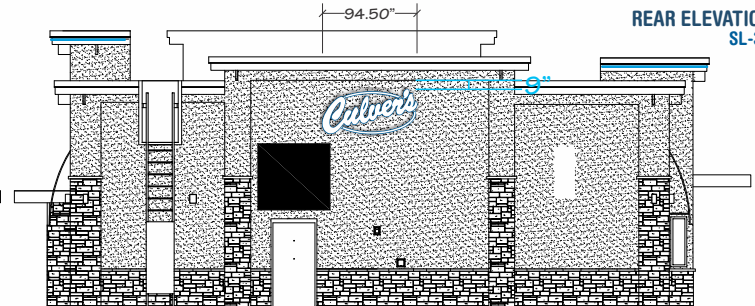


FRONT ELEVATION
SL-45, LL-X



NOT FOR
PRELIMINARY
CONSTRUCTION

REAR ELEVATION
SL-30



DRIVE THRU ELEVATION
SL-30, LL-X, BB-1



SCALE: 1/16" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

SIGN SQUARE FOOTAGE

MAIN ELEVATION QTY-1 SL-30 (44.37" X 94.50") = 29.12 SF
FRONT ELEVATION: QTY-1 SL-45 (56.00" X 120.00") = 46.67 SF
REAR ELEVATION: QTY-1 SL-30 (44.37" X 94.50") = 29.12 SF
DRIVE-THRU QTY-1 SL-30 (44.37" X 94.50") = 29.12 SF
ELEVATION: QTY-1 BB-1 (17.67" X 27.88") = 3.42 SF

ALLOWABLE = 2 S/F PER LINEAL FOOT OF FRONTAGE
THAT FACE STREET

NOTES

LL-X LED accent strip lighting typical placements:
RIGHT: (3) places - REAR: NA - FRONT: (3) places
LEFT: (3) places
BB-1 typical Drive-Thru placement: FRONT



MFG: T.B.D.
STYLE: T.B.D.
COLOR: T.B.D.



MFG: T.B.D.
STYLE: T.B.D.
COLOR: T.B.D.

DATE CREATED / REVISION HISTORY

09/06/22 - NEW

SALES PERSON:
MARK WESSELL

DESIGNED BY:
R HICKS

AO:
39505

FILE PATH: T:\Cyrius\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign & Graphics Inc. unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



SPRINGFIELD SIGN

www.springfieldsign.com

PE-40 PYLON WITH EMC

NORTH RIDGEVILLE, OH

PE-40-L-60X180-10-RGB

PE-40

Culver's sign cabinet of aluminum construction and internally illuminated with LED's

Pole skirt enclosure provides cradle rest for iconic Culver's logo. All aluminum construction

Thermoformed polycarbonate faces, embossed Culver's, 3M¹ HP vinyl decoration

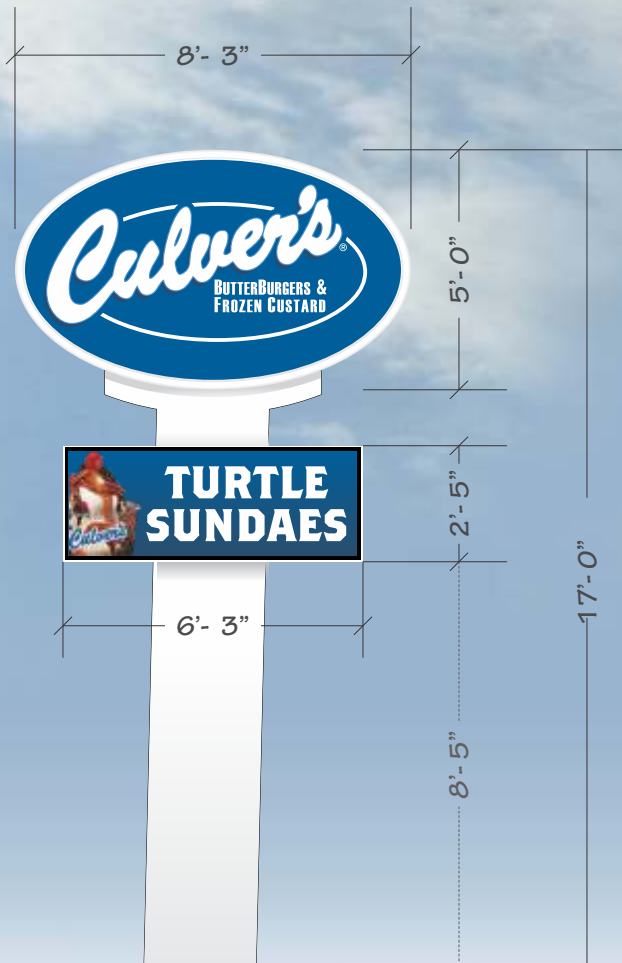
Watchfire² RGB full color Electronic Message Center (EMC) with RF wireless communication

Amber EMC option available

Broadband communication option available

UL marked product

1-3M is a registered trademark of Minnesota Mining & Manufacturing
2 - Watchfire signs by Time-O-Matic Inc.



NOT FOR
PRELIMINARY
CONSTRUCTION

EMC CHART - KNOWN RESTRICTIONS

COLOR: Y ☐ N ☐ STATIC: Y ☐ N ☐ VIDEO: Y ☐ N ☐
ANIMATION: Y ☐ N ☐ MOVEMENT: Y ☐ N ☐

HOLD TIME (IF STATIC): _____

TRANSITION TYPE: _____

DAYTIME BRIGHTNESS: _____

NIGHTTIME BRIGHTNESS: _____

ADDITIONAL RESTRICTIONS:

SIGN CODES

NOTES

MAX S/F 60

MATHEMATICAL CALS:
OVAL(32.4SF) + EMC(15.1SF) = 47.5 SF TOTAL

SALES PERSON:

MARK WESSELL

DESIGNED BY:

R HICKS

A0:

39505

DATE CREATED / REVISION HISTORY

09/06/22 - NEW

FILE PATH: T:\Cyrilous\Doc\Order\39000\o39505

SCALE: 1/4" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



SPRINGFIELD SIGN

www.springfieldsign.com

PE-135 PYLON

NORTH RIDGEVILLE, OH

PE-135-L

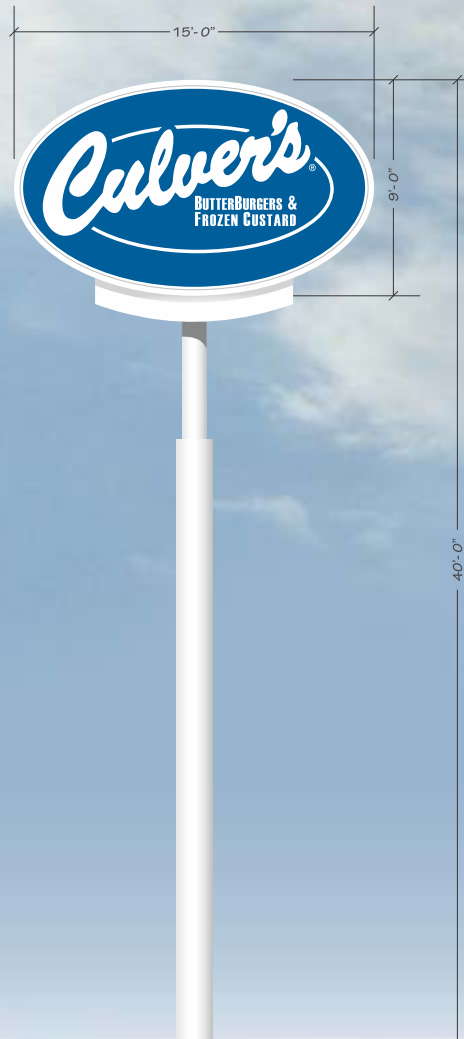
PE-135

Culver's sign cabinet of aluminum construction and internally illuminated with LED's

No pole skirt - finish pipe with satin white per specifications
cradle rest for iconic Culver's logo.
All aluminum construction

Thermoformed polycarbonate faces, embossed Culver's, 3M HP vinyl decoration

UL marked product



SCALE: 1/8" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

EMC CHART - KNOWN RESTRICTIONS

COLOR: Y ☐ N ☐ STATIC: Y ☐ N ☐ VIDEO: Y ☐ N ☐
ANIMATION: Y ☐ N ☐ MOVEMENT: Y ☐ N ☐

HOLD TIME (IF STATIC): _____

TRANSITION TYPE: _____

DAYTIME BRIGHTNESS: _____

NIGHTTIME BRIGHTNESS: _____

ADDITIONAL RESTRICTIONS:

--

SIGN CODES

--

NOTES

MATHEMATICAL CALCS:
OVAL: 106.035F

SALES PERSON:
MARK WESSELL

DESIGNED BY:
R. HICKS

A0:
39505

DATE CREATED / REVISION HISTORY

09/08/22 - NEW	

FILE PATH: T:\Cyrius\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



SPRINGFIELD SIGN

www.springfieldsign.com

DTC-2 DRIVE-THRU CANOPY

NORTH RIDGEVILLE, OH

Drive-Thru Canopy For Order Confirmation System (OCS)

DTC-2

All aluminum construction

Rated for 160 mph winds (3 second burst) & heavy northern states snow loads

Order Confirmation System (OCS) by others

Rear panel (door) access - lockable

Provides protection from rain for DT customer

Houses OCS, speaker & microphone

QTY: 2

Culver's



SCALE: 3/8" = 1'



*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

NOTES

DATE CREATED / REVISION HISTORY

09/06/22 - NEW

SALES PERSON:
MARK WESSELL

DESIGNED BY:
R HICKS

AO:
39505

FILE PATH: T:\Cyrus\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



ENVIRONMENTALLY RESPONSIBLE



SPRINGFIELD SIGN

www.springfieldsign.com

MAX-1 MAXIMUM OCCUPANCY SIGN

NORTH RIDGEVILLE, OH

Interior Maximum Occupancy Sign

MAX-1

3/16" White acrylic substrate

Direct to surface printing

3M¹ VHB peel & stick adhesive on back

"MAXIMUM OCCUPANCY" must be verified prior to manufacturing

1 - 3M is a registered trademark of Minnesota Mining & Manufacturing

Culver's



SCALE: 3" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

NOTES

DATE CREATED / REVISION HISTORY

09/06/22 - NEW

SALES PERSON:
MARK WESSELL

DESIGNED BY:
R HICKS

AO:
39505

FILE PATH: T:\Cyrious\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



ENVIRONMENTALLY
RESPONSIBLE



SPRINGFIELD SIGN

www.springfieldsign.com

MB-DT-46 EXTERIOR MENU BOARD

NORTH RIDGEVILLE, OH

Blue Outdoor Drive-Thru Menu Board

MB-DT-46

Standard Menu Board for Drive-Thru Lane

LED Internal Illumination

POP Graphic panels must be purchased separately

POPP-Out magnet access panels included for easy in & out of POP panels

"-CS" option for 160mph coastal wind standards available

Locking rear access doors (4)

QTY: 2

Culver's

FRONT



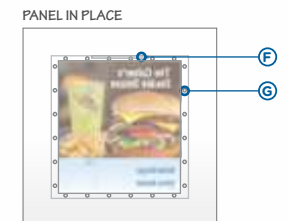
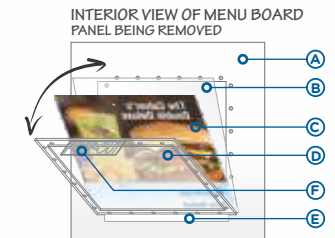
REAR



SCALE: 3/8" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

POPP-Out Point Of Purchase Panel System



- A - INSIDE BACK OF MENU BOARD FACE (ONLY ONE PANEL SHOWN FOR CLARITY)
- B - FRONT PANEL IS ANTI-GLARE (CLEAR) FOR INCREASED VISIBILITY
- C - POP PANEL - PRODUCT GRAPHIC
- D - REAR PANEL FITTED WITH POPP-Out PANEL
- E - SUPPORTING "TIP TRAY" FOR PANELS (SELF ALIGNING)
- F - POPP-Out TAB HANDLE
- G - PAIRED MAGNETIC "LATCH" (MAGNETS EMBEDDED IN POP-Out PANEL & BACK OF MENU BOARD)

SALES PERSON:	DESIGNED BY:	AO:
MARK WESSELL	R HICKS	39505

DATE CREATED / REVISION HISTORY	
09/06/22 - NEW	

FILE PATH: T:\Cyrious\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



SPRINGFIELD SIGN
www.springfieldsign.com

MB-ID-84 INTERIOR MENU BOARD

NORTH RIDGEVILLE, OH

Blue Indoor Menu Board

MB-ID-84

Easy lift up & out graphic panel

American Beech Wood surround

Surround is painted black

LED internal illumination

Ultra low power consumption

FRONT VIEW



END VIEW



Culver's

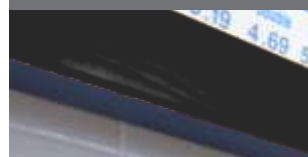
SCALE: 3/8" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

NOTES

MENU BOARD TO INSTALL CENTERED TO THE FRONT CASH REGISTER COUNTER

WOOD SURROUND



DATE CREATED / REVISION HISTORY

09/06/22 - NEW

SALES PERSON:
MARK WESSELL

DESIGNED BY:
R HICKS

AO:
39505

FILE PATH: T:\Cyrious\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



ENVIRONMENTALLY
RESPONSIBLE

 **SPRINGFIELD SIGN**
www.springfieldsign.com

REG-HC-1 PARKING SIGN

NORTH RIDGEVILLE, OH

Handicapped Parking Post & Panel Sign

REG-HC-1

All aluminum 0.080" thick panel

U-Channel steel post (green)

Bolted connection

Local codes may require actual copy/graphics to vary

Rounded corners for safety

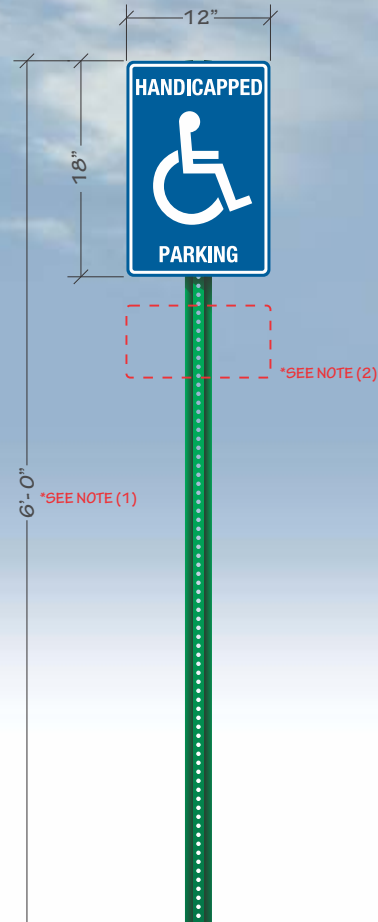
First surface vinyl (printed) copy

NOTE 1: Overall height can vary per local codes

NOTE 2: 6' x 12" sign panel may also be required

Culver's

SCALE: 3/4" = 1'



*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

ADDITIONAL PARKING SIGN PANELS

STANDARD FACE OPTIONS:



ADDITIONAL FACE OPTIONS:



SCALE: 1/2" = 1'

SALES PERSON: MARK WESSELL	DESIGNED BY: R. HICKS	A0: 39505
-------------------------------	--------------------------	--------------

DATE CREATED / REVISION HISTORY	
09/06/22 - NEW	

FILE PATH: T:\Cyrus\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



SPRINGFIELD SIGN
www.springfieldsign.com

RR-1-G, RR-1-L, RR-3 RESTROOM SIGNS

NORTH RIDGEVILLE, OH

Restroom Signs

RR-1-G
RR-1-L
RR-3

RR-1 SERIES RESTROOM SIGNS

Injection molded plastic

ADA compliant

Raised braille

Self adhesive back

RR-3 SIGN

White aluminum substrate -
laminated with black core

Digitally printed blue copy routed
to shape



RR-1-G
GENTLEMEN



RR-1-L
LADIES



RR-3
LADIES

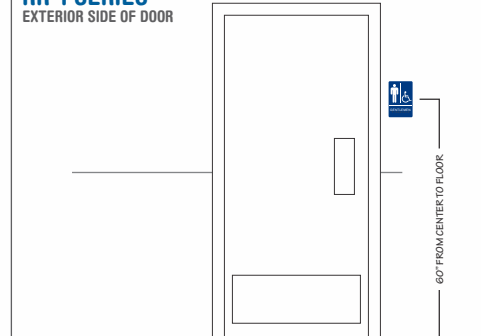
SCALE: 3" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

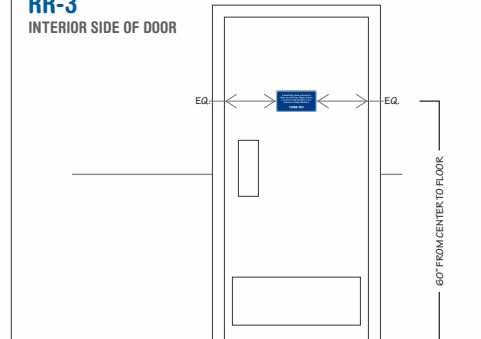
NOT FOR
PRELIMINARY
CONSTRUCTION

SIGN MOUNTING LOCATIONS

RR-1 SERIES EXTERIOR SIDE OF DOOR



RR-3 INTERIOR SIDE OF DOOR



SCALE: 1-1/2" = 1'

SALES PERSON:	DESIGNED BY:	A0:
MARK WESSELL	R. HICKS	39505

DATE CREATED / REVISION HISTORY

09/06/22 - NEW	

FILE PATH: T:\Cyrius\Doc\Order\39000\o39505

Culver's

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



SPRINGFIELD SIGN
www.springfieldsign.com

V-1, V-5, V-6 DOOR & WINDOW VINYL

NORTH RIDGEVILLE, OH

Entry Door & Drive-Thru Vinyl Lettering

V-1-1
V-5-1
V-6

3M¹ HP white vinyl substrate

UV digitally printed image (blue)

Satin gloss over laminate

Contour cut

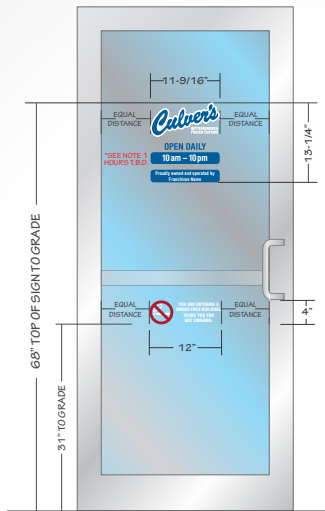
First surface application

NOTE 1: Business hours shown are typical. However, each location may be different than shown.

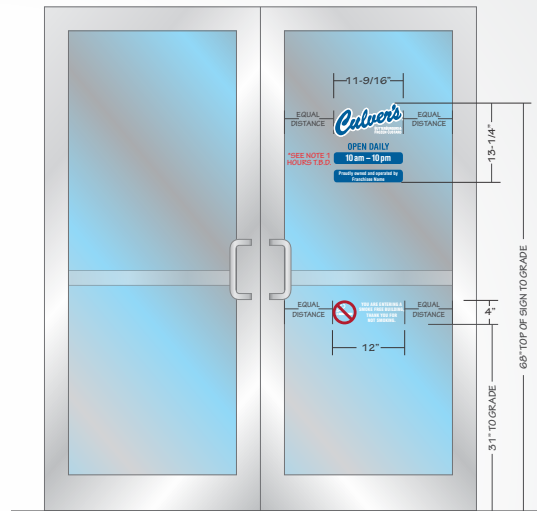
1 - 3M is a registered trademark of Minnesota Mining & Manufacturing

Culver's

V-1-1 & V-6
TYPICAL SINGLE DOOR LAYOUT

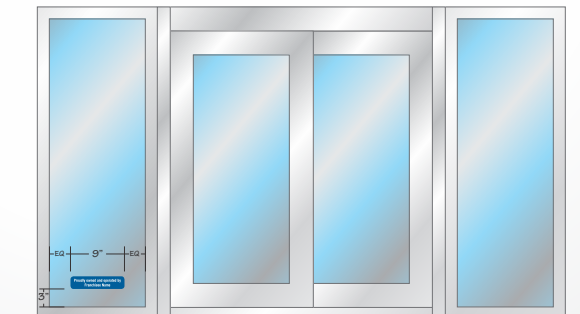


V-1-1 & V-6
TYPICAL DOUBLE DOOR LAYOUT



**NOT FOR
PRELIMINARY
CONSTRUCTION**

V-5-1
TYPICAL DRIVE-THRU LAYOUT



SCALE: 3/8" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

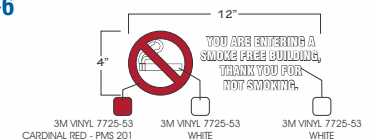
SIGN SPECIFICATIONS

V-1-1



SCALE: 1-1/2" = 1'

V-6



SCALE: 1-1/2" = 1'

V-5-1



SCALE: 1-1/2" = 1'

SALES PERSON:	DESIGNED BY:	AO:
MARK WESSELL	R HICKS	39505

DATE CREATED / REVISION HISTORY

09/06/22 - NEW

FILE PATH: T:\Cyrius\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



SPRINGFIELD SIGN

www.springfieldsign.com

VHD-1 VEHICLE HEIGHT DETECTOR

NORTH RIDGEVILLE, OH

Vehicle Height Detector for Drive-Thru Lane

VHD-1

All steel (painted) construction

Re-settable if engaged

Used to help protect canopies from advancing vehicles that are too tall

NOTE: Clearance height must be verified prior to mfg.

QTY: 2

Culver's

*SEE NOTE

9' 6" CLEARANCE

NOT FOR
PRELIMINARY
CONSTRUCTION

9' 6"

SCALE: 1/2" = 1'

*SCALE AND COLORS NOT REPRESENTATIVE FROM EMAIL ATTACHMENTS
*ALL MEASUREMENTS ARE APPROXIMATE

CLEARANCE PANEL

*SEE NOTE

5"
40"
9' 6" CLEARANCE

SCALE: 1" = 1'

SALES PERSON:

MARK WESSELL

DESIGNED BY:

R HICKS

A0:

39505

DATE CREATED / REVISION HISTORY

09/06/22 - NEW

FILE PATH: T:\Cyrious\Doc\Order\39000\o39505

© 2021 Springfield Sign & Graphics Inc., Springfield Sign

This drawing is Copyrighted material, it remains the property of Springfield Sign unless otherwise agreed upon in writing. It is unlawful to use this drawing for bidding purposes, nor can it be reproduced, copied or used in the production of a sign without written permission from Springfield Sign & Graphics.

This is an artistic rendition and final colors / sizes may vary from that depicted herein.



ENVIRONMENTALLY
RESPONSIBLE



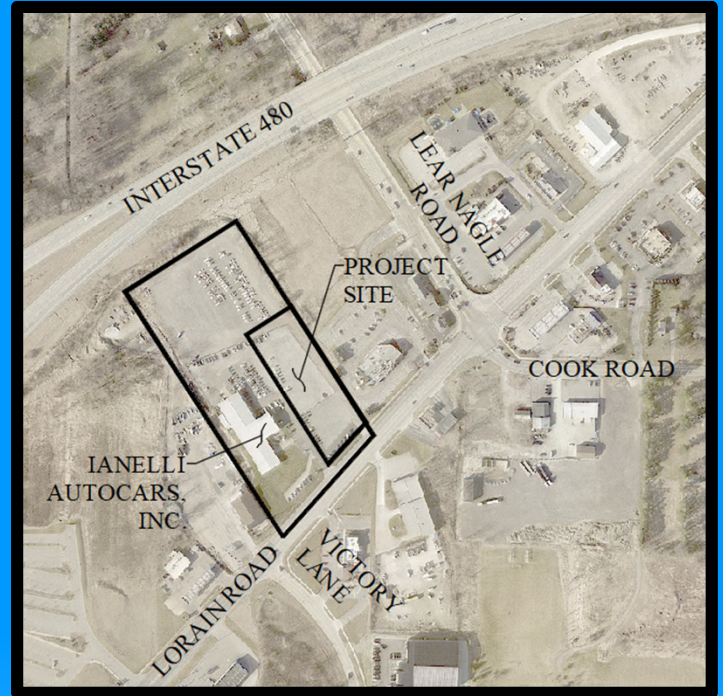
SPRINGFIELD SIGN

www.springfieldsign.com

Storm Water Management Calculations for:



Culver's Restaurant Improvements North Ridgeville, Ohio 44039



Prepared for:

216 Dirt Holdings, LLC

P.O. Box 591

Rhineland, WI 54501

Aaron P. Appell, PE.

State of Ohio Registered Engineer No. 75683

Prepared by:



Bramhall Engineering & Surveying Company
801 Moore Road
Avon, Ohio 44011

September 13th, 2022

Table of Contents

Table of Contents

Stormwater Management Summary

Appendices

Appendix 'A' – Soil Maps & Rainfall Data

Existing Soils Map

Rainfall Frequency Data by:

Huff, Floyd A., and Angel, James R. Rainfall Frequency Atlas of the Midwest.
Illinois State Water Survey, Champaign, Bulletin 71, 1992.

Appendix 9 of ODNr's Rainwater & Land Development Manual

Appendix 'B' – Pre-Developed Conditions

DR-A Existing Drainage Map

Existing Conditions Hydrographs (E1 + E2 + E3 => 1L)

Appendix 'C' – Post-Developed Conditions

DR-B Proposed Drainage Map

Proposed Conditions Hydrographs (P1 + E2 + E3 => 2L)

Appendix 'D' – Underground Detention Calculations

Water Quality Calculations

Underground Detention System Detail Sheet

Underground Detention System Hydrographs (D)

Appendix 'E' – Storm Sewer Calculations

DR-C Storm Sewer Drainage Map

Drainage Areas & "C" Values Chart

10-year Storm Sewer Sizing Calculations

Storm Water Management Summary

Project Description

The project site is located on a 1.74 acre proposed parcel split from Iannelli Autocars at 32626 Lorain Road in North Ridgeville, Ohio. Currently, the site is completely covered in asphalt and gravel and is used as parking for the car dealership. On the northern outskirts of the entire property owned and maintained by Iannelli Autocars (7.30 acres) are swale tributaries to Mills Creek offering drainage to the north/northeast.

The proposed improvements to the site include a new 4,393 s.f. Culver's Restaurant and a surrounding asphalt parking lot. Stormwater management to the new restaurant will be an underground detention system using ADS arch-shaped chambers. This is considered a redevelopment site due to the permanent removal of over 22% pavement on the ground.

Design Basis

The City of North Ridgeville requires that all proposed storm water management facilities shall be required to regulate post-development discharge as follows:

- (1) *The peak discharge rate of runoff from the critical storm and all more frequent storms occurring under post-development conditions shall not exceed the peak discharge rate of runoff from a 1-year, 24-hour storm occurring on the same development drainage area under pre-development conditions.*
- (2) *Storms of less frequent occurrence (longer return periods) than the Critical Storm, up to the 100-year, 24-hr storm shall have peak runoff discharge rates no greater than the peak runoff rates from equivalent size storms under pre-development conditions. The 1, 2, 5, 10, 25, 50, 100-year storms shall be considered in designing a facility to meet this requirement.*

Water Quality

Due to the site removing over 20% impervious surface, the redevelopment water quality calculation in the OEPA NPDES Permit No. OHC000005 does not apply and produced a negative value of required water quality volume. However, since an isolator row was worked into the stormwater management design to offer pretreatment, it also accounts for water quality to what can be captured. Refer to the water quality calculations for the standard redevelopment calculations and the isolator row calculations in **Appendix 'D'**.

Project Methodology

"HydroCAD Storm Water Modeling System" computer software was used to analyze the development site hydrology and hydraulics. The calculations were prepared as follows:

- Soil Conservation Service Technical Release No. 55 (SCS TR-55) was used to determine the runoff curve numbers (CN)

- Rainfall Hydrographs were developed using a SCS TR-20 Type II 24-hour storm distribution.
- A stage-storage relationship was determined for the proposed underground detention system.
- A stage-discharge relationship was determined for the proposed outlet structure.
- Rainfall Frequency data provided by: Huff, Floyd A., and Angel, James R. Rainfall Frequency Atlas of the Midwest. Illinois State Water Survey, Champaign, Bulletin 71, 1992.

Watershed Analysis

The USDA Web Soil Survey was used to determine the types of soil present in the watershed and to classify the soil type by its hydrologic soil group (HSG). The soil groups for post-construction were modified based on ODNR's Appendix 9 of the Rainwater & Land Development Manual. Supporting Documents are located in **Appendix 'A'**.

Site Soil Conditions

Soil Type: Rawson Loam, 0-2% slopes (RdA)

Soil Group: C => modeled as D for post construction

Soil Type: Oshtemo Sandy Loam, 2-6% slopes (OtB)

Soil Group: A => modeled as A for post construction

Soil Type: Luray Silty Clay Loam, 0-2% slopes (Ly)

Soil Group: C/D => modeled as D for post construction

Existing Site Conditions

The project site is currently being used as parking for the neighboring Iannelli Autocars dealership. The entire site is almost completely covered in asphalt or gravel with relatively steep slopes toward the north. Surrounding the entire Iannelli Autocars property are dry swales that seem to make their way to tributaries to Mills Creek.

There are two pockets of offsite drainage that contribute to the overall runoff draining into the existing dry swale. These two offsite areas are calculated into the overall existing runoff discharge rate but were omitted from the critical storm calculation. Refer to the existing conditions drainage map and hydrographs in **Appendix 'B'**.

Existing Project Site Drainage Area (E1): 1.62 acres

Curve Number: 93

1-yr runoff volume: 0.18 ac-ft

Proposed Site Conditions

The proposed improvements include the construction of a 4,393 s.f. single story building for Culver's Restaurant. The building is to be surrounded by an asphalt parking lot and drive-thru. A significant reduction in pavement (22%) will improve the property. Although the total runoff volume for the site will decrease from the improvements, the time of concentration will increase, requiring a need for some kind of stormwater management. Underground detention chambers will handle the stormwater management for the site.

The two offsite drainage areas were not able to be bypassed around the project site and were worked into the routing of the underground detention system. Refer to the proposed drainage map and hydrographs in **Appendix 'C'**.

Proposed Project Site Drainage Area (P1): 1.64 acres

Curve Number: 88

1-yr runoff volume: 0.13 ac-ft

Critical Storm Summary

The critical storm is calculated by determining the volume increase from the 1-yr storm event:

$$\text{Critical Storm} = \frac{1\text{yr Post} - 1\text{yr Pre}}{1\text{yr Pre}} \times 100$$

Critical Storm Calculation for E1 to P1 comparison:

$$\frac{0.13 \text{ acft} - 0.18 \text{ acft}}{0.18 \text{ acft}} \times 100 = -27.8\%$$

The runoff volume for the 1-year 24-hour storm will decrease due to the proposed improvements. For all intents and purposes, the critical storm may be considered the 1-yr storm event.

Tailwater

Tailwater was included with these calculations. The final outfall to the site drains to a dry swale that eventually contributes to Mills Creek. This seems to be at the most upstream end of the dry swale so tailwater was modeled in HydroCAD as a single elevation of the surveyed flowline at the outfall point.

Storm Sewer Design

The onsite storm sewers were designed to convey the 10-year, 24 hour storm. The storm sewers were then checked so that the 25-year, 24 hour storm hydraulic grade line is below the rim elevations of the proposed drainage structures. Refer to the storm sewer sizing map in **Appendix 'E'**.

Storm Water Runoff and Retention Basin Routing Computation Summary

Underground Detention Routing Summary (1-yr Critical Storm)							
Year Storm (Rainfall Depth)	1-yr (1.98)	2-yr (2.44)	5-yr (3.06)	10-yr (3.55)	25-yr (4.35)	50-yr (5.08)	100-yr (5.92)
Pre. Develop Peak (E1+E2+E3=>1L) (cfs)	3.13	4.09	5.38	6.41	8.07	9.59	11.32
Post Developed Peak (P1+E2+E3=>4L) (cfs)	2.90	3.97	5.46	6.65	8.61	10.41	11.09
Post Developed Allowable (cfs)	3.13	4.09	5.38	6.41	8.07	9.59	11.32
Post Developed Routed Flow (cfs)	2.82	3.89	5.11	6.07	7.67	9.16	11.09
Detention Storage (Avail. 2,363 cf)	685	761	952	1,154	1,543	1,930	2,352
Detention WSEL (ft) (Outlet Rim: 764.83)	760.86	760.95	761.17	761.42	761.90	762.46	763.33

Appendix A

Soil Maps, Rainfall Data

Existing Soils Map

Rainfall Frequency Data by:

Huff, Floyd A., and Angel, James R. Rainfall Frequency Atlas of the Midwest. Illinois State Water Survey, Champaign, Bulletin 71, 1992.

Appendix 9 of ODNR's Rainwater & Land Development Manual



United States
Department of
Agriculture

NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for Lorain County, Ohio



July 22, 2022

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

The U.S. Department of Agriculture (USDA) prohibits discrimination in all its programs and activities on the basis of race, color, national origin, age, disability, and where applicable, sex, marital status, familial status, parental status, religion, sexual orientation, genetic information, political beliefs, reprisal, or because all or a part of an individual's income is derived from any public assistance program. (Not all prohibited bases apply to all programs.) Persons with disabilities who require

alternative means for communication of program information (Braille, large print, audiotape, etc.) should contact USDA's TARGET Center at (202) 720-2600 (voice and TDD). To file a complaint of discrimination, write to USDA, Director, Office of Civil Rights, 1400 Independence Avenue, S.W., Washington, D.C. 20250-9410 or call (800) 795-3272 (voice) or (202) 720-6382 (TDD). USDA is an equal opportunity provider and employer.

Contents

Preface	2
Soil Map	5
Soil Map.....	6
Legend.....	7
Map Unit Legend.....	8
Map Unit Descriptions.....	8
Lorain County, Ohio.....	10
Cz—Udorthents.....	10
HsA—Haskins loam, 0 to 2 percent slopes.....	10
Ly—Luray silty clay loam, 0 to 2 percent slopes.....	12
MgA—Mahoning silt loam, 0 to 2 percent slopes.....	13
OtB—Oshtemo sandy loam, 2 to 6 percent slopes.....	15
RdA—Rawson loam, 0 to 2 percent slopes.....	16

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

Custom Soil Resource Report Soil Map



MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Map Unit Polygons

Soil Map Unit Lines

Soil Map Unit Points

Special Point Features

Blowout

Borrow Pit

Clay Spot

Closed Depression

Gravel Pit

Gravelly Spot

Landfill

Lava Flow

Marsh or swamp

Mine or Quarry

Miscellaneous Water

Perennial Water

Rock Outcrop

Saline Spot

Sandy Spot

Severely Eroded Spot

Sinkhole

Slide or Slip

Sodic Spot

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

Spoil Area

Stony Spot

Very Stony Spot

Wet Spot

Other

Special Line Features

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Lorain County, Ohio
Survey Area Data: Version 20, Sep 8, 2021

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Aug 15, 2020—Sep 25, 2020

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
Cz	Udorthents	1.0	2.6%
HsA	Haskins loam, 0 to 2 percent slopes	2.1	5.7%
Ly	Luray silty clay loam, 0 to 2 percent slopes	22.7	61.0%
MgA	Mahoning silt loam, 0 to 2 percent slopes	2.6	6.9%
OtB	Oshtemo sandy loam, 2 to 6 percent slopes	5.0	13.3%
RdA	Rawson loam, 0 to 2 percent slopes	3.9	10.5%
Totals for Area of Interest		37.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it

was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

Lorain County, Ohio

Cz—Udorthents

Map Unit Setting

National map unit symbol: 9nf8
Elevation: 160 to 1,970 feet
Mean annual precipitation: 32 to 42 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 140 to 195 days
Farmland classification: Not prime farmland

Map Unit Composition

Udorthents and similar soils: 100 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Udorthents

Properties and qualities

Depth to restrictive feature: More than 80 inches
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None

HsA—Haskins loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9nfs
Elevation: 600 to 1,300 feet
Mean annual precipitation: 27 to 42 inches
Mean annual air temperature: 45 to 55 degrees F
Frost-free period: 130 to 200 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Haskins and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Haskins

Setting

Landform: Till plains, lake plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Glaciolacustrine deposits over till

Typical profile

H1 - 0 to 13 inches: loam

Custom Soil Resource Report

H2 - 13 to 32 inches: clay loam

H3 - 32 to 60 inches: silty clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: About 6 to 18 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 30 percent

Available water supply, 0 to 60 inches: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 2w

Hydrologic Soil Group: D

Ecological site: F139XY002OH - Moist Calcareous Till Flats

Forage suitability group: Unnamed (G139XYC-2OH)

Other vegetative classification: Unnamed (G139XYC-2OH)

Hydric soil rating: No

Minor Components

Fitchville

Percent of map unit: 4 percent

Landform: Terraces, lake plains

Down-slope shape: Concave

Across-slope shape: Linear

Mermill

Percent of map unit: 3 percent

Landform: Depressions

Hydric soil rating: Yes

Jimtown

Percent of map unit: 3 percent

Landform: Terraces

Landform position (two-dimensional): Footslope

Landform position (three-dimensional): Tread

Down-slope shape: Concave

Across-slope shape: Linear

Mahoning

Percent of map unit: 3 percent

Landform: Till plains

Areas with a sandy loam, gravelly loam or silt loam surface

Percent of map unit: 1 percent

Areas where the soil has a redder color

Percent of map unit: 1 percent

Ly—Luray silty clay loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2v056
Elevation: 590 to 1,970 feet
Mean annual precipitation: 33 to 52 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Luray and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Luray

Setting

Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Parent material: Glaciolacustrine deposits

Typical profile

Ap - 0 to 9 inches: silty clay loam
AB - 9 to 13 inches: silty clay loam
Btg - 13 to 38 inches: silty clay loam
BCg - 38 to 41 inches: silty clay loam
Cg - 41 to 72 inches: silt loam

Properties and qualities

Slope: 0 to 2 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Very poorly drained
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.14 to 1.42 in/hr)
Depth to water table: About 0 to 6 inches
Frequency of flooding: None
Frequency of ponding: Frequent
Calcium carbonate, maximum content: 9 percent
Available water supply, 0 to 60 inches: High (about 11.5 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 2w
Hydrologic Soil Group: C/D
Ecological site: F139XY011OH - Wet Calcareous Depression
Hydric soil rating: Yes

Minor Components

Sebring

Percent of map unit: 10 percent
Landform: Terraces
Landform position (three-dimensional): Tread
Down-slope shape: Concave
Across-slope shape: Concave
Hydric soil rating: Yes

Fitchville

Percent of map unit: 5 percent
Landform: Lakebeds (relict), terraces
Landform position (three-dimensional): Tread, tal
Down-slope shape: Concave
Across-slope shape: Linear
Hydric soil rating: No

MgA—Mahoning silt loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 2v02z
Elevation: 590 to 1,970 feet
Mean annual precipitation: 33 to 52 inches
Mean annual air temperature: 43 to 52 degrees F
Frost-free period: 135 to 215 days
Farmland classification: Prime farmland if drained

Map Unit Composition

Mahoning and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mahoning

Setting

Landform: Till plains
Landform position (two-dimensional): Summit, footslope
Landform position (three-dimensional): Interfluve, base slope
Down-slope shape: Concave
Across-slope shape: Linear
Parent material: Till

Typical profile

Ap - 0 to 7 inches: silt loam
Eg - 7 to 9 inches: silt loam
Btg - 9 to 12 inches: silty clay loam
Bt1 - 12 to 20 inches: silty clay
Bt2 - 20 to 30 inches: silty clay
BCt - 30 to 36 inches: clay loam

Custom Soil Resource Report

C - 36 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Somewhat poorly drained

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.14 in/hr)

Depth to water table: About 6 to 12 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 15 percent

Available water supply, 0 to 60 inches: Moderate (about 6.6 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 3w

Hydrologic Soil Group: D

Ecological site: F139XY002OH - Moist Calcareous Till Flats

Hydric soil rating: No

Minor Components

Trumbull

Percent of map unit: 5 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Miner

Percent of map unit: 5 percent

Landform: Depressions

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Base slope

Down-slope shape: Concave

Across-slope shape: Concave

Hydric soil rating: Yes

Ellsworth

Percent of map unit: 5 percent

Landform: Till plains

Landform position (two-dimensional): Summit, shoulder

Landform position (three-dimensional): Interfluvium, side slope

Down-slope shape: Convex

Across-slope shape: Convex

Hydric soil rating: No

OtB—Oshtemo sandy loam, 2 to 6 percent slopes

Map Unit Setting

National map unit symbol: 9ngy
Elevation: 600 to 1,000 feet
Mean annual precipitation: 28 to 42 inches
Mean annual air temperature: 46 to 54 degrees F
Frost-free period: 120 to 195 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Oshtemo and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Oshtemo

Setting

Landform: Terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Linear
Parent material: Outwash

Typical profile

H1 - 0 to 12 inches: sandy loam
H2 - 12 to 30 inches: gravelly sandy loam
H3 - 30 to 62 inches: loamy sand

Properties and qualities

Slope: 2 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Well drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High (2.00 to 6.00 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 25 percent
Available water supply, 0 to 60 inches: Low (about 6.0 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 3s
Hydrologic Soil Group: A
Ecological site: F139XY003OH - Dry Calcareous Till Plains
Hydric soil rating: No

Minor Components

Tyner

Percent of map unit: 3 percent
Landform: Beach plains on lake plains, beach ridges on lake plains
Landform position (two-dimensional): Summit, backslope
Landform position (three-dimensional): Interfluvium, side slope
Down-slope shape: Convex
Across-slope shape: Convex

Chili

Percent of map unit: 3 percent
Landform: Terraces

Haskins

Percent of map unit: 3 percent
Landform: Till plains, lake plains
Landform position (two-dimensional): Summit, shoulder, backslope
Landform position (three-dimensional): Rise
Down-slope shape: Convex
Across-slope shape: Linear

Small areas of moderately eroded soils

Percent of map unit: 2 percent

Areas with as much as 70 percent gravel

Percent of map unit: 2 percent

Areas with a loam or fine sandy loam surface

Percent of map unit: 2 percent

RdA—Rawson loam, 0 to 2 percent slopes

Map Unit Setting

National map unit symbol: 9nh1
Elevation: 780 to 800 feet
Mean annual precipitation: 31 to 42 inches
Mean annual air temperature: 48 to 54 degrees F
Frost-free period: 140 to 208 days
Farmland classification: All areas are prime farmland

Map Unit Composition

Rawson and similar soils: 85 percent
Minor components: 15 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rawson

Setting

Landform: Hills
Landform position (two-dimensional): Summit

Custom Soil Resource Report

Landform position (three-dimensional): Interfluve

Down-slope shape: Convex

Across-slope shape: Linear

Parent material: Outwash over till

Typical profile

H1 - 0 to 11 inches: loam

H2 - 11 to 25 inches: sandy loam

H3 - 25 to 60 inches: clay loam

Properties and qualities

Slope: 0 to 2 percent

Depth to restrictive feature: More than 80 inches

Drainage class: Moderately well drained

Runoff class: Medium

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: About 18 to 30 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum content: 25 percent

Available water supply, 0 to 60 inches: Moderate (about 8.7 inches)

Interpretive groups

Land capability classification (irrigated): None specified

Land capability classification (nonirrigated): 1

Hydrologic Soil Group: C

Ecological site: F139XY002OH - Moist Calcareous Till Flats

Hydric soil rating: No

Minor Components

Haskins

Percent of map unit: 5 percent

Landform: Till plains, lake plains

Landform position (two-dimensional): Summit, shoulder, backslope

Landform position (three-dimensional): Rise

Down-slope shape: Convex

Across-slope shape: Linear

Areas with a silt loam or sandy loam surface

Percent of map unit: 4 percent

Areas of moderately eroded soils

Percent of map unit: 3 percent

Areas of gravelly soils

Percent of map unit: 3 percent

(MCC) with Stanley Changnon and Peter J. Lamb as the co-principal investigators. The work was continued and completed under the general direction of Kenneth Kunkel, present MCC Director.

Special appreciation goes to Stan Changnon for his foresight, guidance, and encouragement in establishing and accomplishing the program objectives. He and Ken Kunkel reviewed the report and made useful comments and suggestions. Special thanks go to Richard Katz, National Center for Atmospheric Research; Tibor Farago, Hungarian Meteorological Service; and J.R.M. Hosking, IBM Research Division, for providing software for some of the extreme rainfall

analyses. Fred Nurnberger, Michigan State Climatologist, provided valuable long-term precipitation data for his state as well as comments on the manuscript. We also thank the following state climatologists for their review and comments on this project: Wayne Wendland, Illinois; Ken Scheeringa, Indiana; Harry Hillaker, Iowa; Glen Conner, Kentucky; Jim Zandlo, Minnesota; Wayne Decker, Missouri; Jeff Rogers, Ohio; and Pam Naber-Knox, Wisconsin.

John Brother and Linda Hascall supervised the extensive drafting work required for the report. Jean Dennison typed and assembled the report, which Eva Kingston edited and formatted.



Figure 1. Climatic sections for the Midwest

**Table 8. Sectional Mean Frequency Distributions for Storm Periods of 5 Minutes to 10 Days
and Recurrence Intervals of 2 Months to 100 Years in Ohio**

Sectional code (see figure 1 on page 4)

01 – Northwest
02 – North Central
03 – Northeast
04 – West Central
05 – Central
06 – Central Hills
07 – Northeast Hills
08 – Southwest
09 – South Central
10 – Southeast

Rainfall (inches) for given recurrence interval

Section	Duration	2-month	3-month	4-month	6-month	9-month	1-year	2-year	5-year	10-year	25-year	50-year	100-year
01	10-day	1.69	2.04	2.35	2.76	3.17	3.45	4.22	5.17	5.89	6.83	7.56	8.31
01	5-day	1.42	1.70	1.93	2.23	2.57	2.79	3.43	4.29	4.92	5.81	6.51	7.26
01	72-hr	1.27	1.49	1.69	1.96	2.25	2.45	3.05	3.77	4.33	5.17	5.89	6.71
01	48-hr	1.17	1.36	1.52	1.76	2.02	2.20	2.74	3.43	3.96	4.74	5.40	6.14
01	24-hr	1.12	1.30	1.42	1.64	1.87	2.03	2.52	3.18	3.70	4.43	5.05	5.73
01	18-hr	1.05	1.22	1.34	1.55	1.76	1.91	2.37	2.99	3.48	4.16	4.75	5.39
01	12-hr	0.97	1.13	1.24	1.43	1.63	1.77	2.19	2.77	3.22	3.85	4.39	4.99
01	6-hr	0.84	0.97	1.06	1.23	1.40	1.52	1.89	2.38	2.78	3.32	3.79	4.30
01	3-hr	0.71	0.83	0.91	1.05	1.20	1.30	1.61	2.04	2.37	2.84	3.23	3.67
01	2-hr	0.65	0.76	0.83	0.96	1.09	1.18	1.46	1.84	2.15	2.57	2.93	3.32
01	1-hr	0.52	0.61	0.66	0.77	0.87	0.95	1.18	1.49	1.74	2.08	2.37	2.69
01	30-min	0.41	0.48	0.52	0.61	0.69	0.75	0.93	1.18	1.37	1.64	1.87	2.12
01	15-min	0.30	0.35	0.38	0.45	0.51	0.55	0.68	0.86	1.00	1.20	1.36	1.55
01	10-min	0.24	0.28	0.30	0.35	0.40	0.43	0.53	0.67	0.78	0.93	1.06	1.20
01	5-min	0.13	0.15	0.17	0.19	0.22	0.24	0.30	0.38	0.44	0.53	0.61	0.69
02	10-day	1.63	1.96	2.26	2.66	3.05	3.32	4.19	5.31	6.19	7.40	8.35	9.35
02	5-day	1.35	1.61	1.82	2.11	2.43	2.64	3.33	4.32	5.10	6.21	7.14	8.14
02	72-hr	1.22	1.43	1.61	1.87	2.15	2.34	2.93	3.69	4.34	5.39	6.33	7.39
02	48-hr	1.14	1.33	1.48	1.72	1.98	2.15	2.67	3.37	3.94	4.86	5.70	6.68
02	24-hr	1.09	1.27	1.39	1.60	1.82	1.98	2.44	3.06	3.55	4.35	5.08	5.92
02	18-hr	1.02	1.19	1.30	1.51	1.71	1.86	2.29	2.88	3.34	4.09	4.78	5.56
02	12-hr	0.95	1.10	1.20	1.39	1.58	1.72	2.12	2.66	3.09	3.78	4.42	5.15
02	6-hr	0.82	0.95	1.04	1.21	1.37	1.49	1.83	2.30	2.66	3.26	3.81	4.44
02	3-hr	0.70	0.81	0.89	1.03	1.17	1.27	1.56	1.96	2.27	2.78	3.25	3.79
02	2-hr	0.63	0.74	0.80	0.93	1.06	1.15	1.42	1.77	2.06	2.52	2.95	3.43
02	1-hr	0.51	0.60	0.65	0.75	0.86	0.93	1.15	1.44	1.67	2.04	2.39	2.78
02	30-min	0.40	0.47	0.51	0.59	0.67	0.73	0.90	1.13	1.31	1.61	1.88	2.19
02	15-min	0.29	0.34	0.37	0.43	0.49	0.53	0.66	0.83	0.96	1.17	1.37	1.60
02	10-min	0.23	0.27	0.29	0.34	0.39	0.42	0.51	0.64	0.75	0.91	1.07	1.24
02	5-min	0.13	0.15	0.17	0.19	0.22	0.24	0.29	0.37	0.43	0.52	0.61	0.71
03	10-day	1.70	2.05	2.36	2.78	3.19	3.47	4.29	5.34	6.17	7.30	8.19	9.14
03	5-day	1.37	1.64	1.86	2.15	2.47	2.69	3.34	4.23	4.95	5.96	6.82	7.74
03	72-hr	1.26	1.48	1.67	1.94	2.23	2.42	2.99	3.72	4.34	5.31	6.15	7.09
03	48-hr	1.18	1.38	1.53	1.78	2.04	2.22	2.75	3.42	3.99	4.87	5.66	6.55
03	24-hr	1.12	1.31	1.43	1.65	1.88	2.04	2.50	3.10	3.60	4.39	5.11	5.89
03	18-hr	1.06	1.23	1.34	1.56	1.77	1.92	2.35	2.91	3.38	4.13	4.80	5.54
03	12-hr	0.97	1.13	1.24	1.43	1.63	1.77	2.17	2.70	3.13	3.82	4.45	5.12
03	6-hr	0.84	0.98	1.07	1.24	1.41	1.53	1.88	2.32	2.70	3.29	3.83	4.42
03	3-hr	0.72	0.84	0.92	1.06	1.21	1.31	1.60	1.98	2.30	2.81	3.27	3.77
03	2-hr	0.65	0.76	0.83	0.96	1.09	1.18	1.45	1.80	2.09	2.55	2.96	3.42
03	1-hr	0.53	0.61	0.67	0.78	0.88	0.96	1.17	1.46	1.69	2.06	2.40	2.77
03	30-min	0.41	0.48	0.52	0.61	0.69	0.75	0.93	1.15	1.33	1.62	1.89	2.18
03	15-min	0.30	0.35	0.38	0.45	0.51	0.55	0.68	0.84	0.97	1.19	1.38	1.59
03	10-min	0.24	0.28	0.30	0.35	0.40	0.43	0.52	0.65	0.76	0.92	1.07	1.24
03	5-min	0.13	0.15	0.17	0.19	0.22	0.24	0.30	0.37	0.43	0.53	0.61	0.71

Appendix 9: Adjusting Hydrologic Soil Group for Construction

This appendix provides hydrologic soil group (HSG) values for undisturbed Ohio soils and predictable HSG values for Ohio soils that are altered by construction practices.

Hydrologic soil groups are used to assign a Curve Number (CN) when performing runoff calculations or in hydrologic models. Soil map units have been assigned to the four Hydrologic Soil Groups in technical resources and soil resources published by the USDA Natural Resource Conservation Service¹ (NRCS). NRCS HSG values are based on undisturbed, naturally-occurring soils. In contrast, soils at development sites are typically changed dramatically by construction practices that remove topsoil, change the soil profile and compact soils with heavy equipment. The runoff potential of a site is significantly impacted by these changes and should be reflected in hydrologic modeling and runoff calculations.

The following tables contain the HSGs and predicted HSGs for post-construction that were developed by applying the HSG criteria to modeled representative post-construction soil profiles. The modeled scenario consisted of the removal of the topsoil and subsoil to a depth of 18 inches and the compaction of the zone from 0 to 6 inches at the new surface. A fuller explanation of this process is available at the end of this appendix.

Soil Map Unit Component	HSG ¹	Post-Const HSG
Aaron	C	D
Abscota Variant (Warren)	A	No Eval.
Adrian	A/D	D
Aetna	B/D	D
Alexandria	C	D
Alford	B	D
Algansee	A/D	D
Algiers	B/D	D
Allegheny	B	C
Allegheny Variant (Belmont, Pike)	B	No Eval.
Allis	D	D
Alvada	B/D	D
Amanda	C	D
Amanda Variant (Licking)	B	No Eval.
Arkport	A	A
Ashton	B	D
Atlas	D	D
Aurand	C/D	D
Ava	C	D
Avonburg	D	D
Barkcamp	A	No Eval.

Soil Map Unit Component	HSG ¹	Post-Const HSG
Barkcamp (CL surface)	A	A
Barkcamp (L surface)	A	B
Beasley	C	No Eval.
Beaucoup	C/D	D
Belmore	B	C
Belpre	C	No Eval.
Bennington	C/D	D
Berks	B	D
Bethesda	C	D
Biglick	D	D
Birkbeck	B	D
Bixler	B	D
Blairton	C	No Eval.
Blakeslee	B/D	D
Blanchester	C/D	D
Blount	C/D	D
Bogart	B/D	D
Bogart Variant (Mahoning)	C	No Eval.
Bonnell	C	D
Bonnie	C/D	D
Bono	C/D	D

Notes: CL = clay loam; L = loam; substr = substratum; limestone substr = limestone substratum; Dual classes in Ohio, such as A/D, B/D, C/D are given for drained or undrained condition; No Eval. = No evaluation performed.

1. Hydrologic Soil Groups (HSGs) for Ohio (for undisturbed naturally-occurring sites) were updated in 2008 and should be used rather than HSGs from earlier publications (http://www.oh.nrcs.usda.gov/technical/soils/OH_hsg.pdf or contact the USDA Natural Resources Conservation Service in Columbus, Ohio). You may also utilize www.OhioERIN.com to find site specific HSG (unaltered).

Soil Map Unit Component	HSG ¹	Post-Const HSG
Hoytville Variant	C/D	D
Huntington	B	D
Hyatts	C/D	D
Ionia	B	No Eval.
Iva	C/D	D
Jenera	C/D	D
Jeneva	B	No Eval.
Jessup	C	D
Jimtown	B/D	D
Johnsburg	D	D
Joliet	D	D
Jonesboro	C	D
Jules	B	No Eval.
Kanawha	B	C
Kane	B/D	D
Keene	C	D
Kendallville	C	C
Kensington	B	C/D
Kerston	C/D	D
Kibbie	B/D	D
Killbuck	C/D	D
Kings Variant	C/D	D
Kingsville	A/D	D
Kinn	B	No Eval.
Knoxdale	B	No Eval.
Kokomo	C/D	D
Kyger	A/D	D
Lakin	A	A
Lamberjack	B/D	D
Lamson	A/D	D
Landes	A	A
Lanier	A	A
Latham	D	D
Latty	C/D	D
Latty (till substr)	C/D	D
Lawshe	D	D
Lenawee	C/D	D
Lenawee Variant	C/D	D
Leoni	A	No Eval.
Lewisburg	D	D
Library Variant	C/D	D
Libre	C	No Eval.
Licking	C	D
Lily	B	D

Soil Map Unit Component	HSG ¹	Post-Const HSG
Lindside	C	D
Linwood	B/D	D
Lippincott	B/D	D
Lobdell	C	D
Lockport	D	D
Lorain	C/D	D
Lordstown	C	D
Lorenzo	A	No Eval.
Losantville	D	D
Loudon	C	D
Loudonville	C	D
Lowell	C	D
Lucas	D	D
Lumberton	B	D
Luray	C/D	D
Luray Variant (Stark)	B/D	D
Lybrand	C	D
Lykens	C	D
Mahalasville	B/D	D
Mahoning	C/D	D
Marblehead	D	D
Marengo	B/D	D
Markland	C	D
Martinsville	B	D
Martisco	B/D	D
Martisco Variant (Logan)	C/D	D
McGary	C/D	D
McGary Variant	C/D	D
McGuffey	D	D
Mechanicsburg	B	C
Medway	C	D
Medway Variant	C	D
Medway (limestne substr)	B/D	D
Melvin	B/D	D
Mentor	B	D
Mermill	C/D	D
Mermill Variant	C/D	D
Mertz	C	C
Metamora	B/D	D
Miami	C	D
Miami Variant	C	No Eval.
Miamian	C	D
Miamian Variant	C	No Eval.
Milford	C/D	D

Notes: CL = clay loam; L = loam; substr = substratum; limestne substr = limestone substratum; Dual classes in Ohio, such as A/D, B/D, C/D are given for drained or undrained condition; No Eval. = No evaluation performed.

1. Hydrologic Soil Groups (HSGs) for Ohio (for undisturbed naturally-occurring sites) were updated in 2008 and should be used rather than HSGs from earlier publications (http://www.oh.nrcs.usda.gov/technical/soils/OH_hsg.pdf or contact the USDA Natural Resources Conservation Service in Columbus, Ohio). You may also utilize www.OhioERIN.com to find site specific HSG (unaltered).

Soil Map Unit Component	HSG ¹	Post-Const HSG
Mill	C/D	D
Millgrove	B/D	D
Millsdale	C/D	D
Milton	C	D
Milton Variant	C	No Eval.
Miner	C/D	D
Minoa	B/D	D
Mitiwanga	C/D	D
Mitiwanga Variant	D	D
Monongahela	D	D
Montgomery	C/D	D
Montgomery Variant (Pike)	D	D
Morley	D	D
Morley (limestone substr)	C	No Eval.
Morningsun	B	No Eval.
Morristown	C	C
Morrisville	C	No Eval.
Mortimer	C/D	D
Moshannon	B	D
Muck	B/D	D
Muse	C	D
Muskego	C/D	D
Muskingum	C	C
Nappanee	D	D
Negley	A	C
Neotoma	A	No Eval.
Newark	B/D	D
Newark Variant	B/D	D
Nicely	C	No Eval.
Nicholson	C	No Eval.
Nineveh	B	No Eval.
Nolin	B	D
Nolin Variant	B	No Eval.
Oakville	A	A
Ockley	B	C
Odell	C/D	D
Ogontz	B	No Eval.
Olentangy	B/D	D
Olmsted	B/D	D
Omurga	D	D
Opequon	D	D
Orrville	B/D	D
Orrville Variant (Richland)	A/D	D
Orrville Variant (Ashland)	C/D	D

Soil Map Unit Component	HSG ¹	Post-Const HSG
Oshtemo	A	A
Oshtemo (till substr)	A	C
Otego	B/D	D
Otisville	A	A
Ottokee	A	D
Ottokee (till substr)	A	No Eval.
Otwell	D	D
Pacer	B	No Eval.
Painesville	C/D	D
Pandora	C/D	D
Papakating	C/D	D
Parke	B	D
Parr	B	No Eval.
Pate	D	D
Patton	B/D	D
Patton Variant	B/D	D
Paulding	D	D
Pekin	D	D
Peoga	C/D	D
Perrin	A	No Eval.
Pewamo	C/D	D
Pewamo Variant	C/D	D
Philo	B	D
Pierpont	C	D
Pike	B	D
Pinegrove	A	A
Pinnebog	A/D	D
Piopolis	C/D	D
Plainfield	A	A
Platea	D	D
Plattville	C	No Eval.
Plumbrook	A/D	D
Pope	B	A
Princeton	B	B
Prout	C/D	D
Purdy Variant	C/D	D
Pyrmont	D	D
Ragsdale	C/D	D
Rainsboro	C	D
Rainsville	C	No Eval.
Ramsey	D	D
Randolph	C/D	D
Rarden	D	D
Raub	B/D	D

Notes: CL = clay loam; L = loam; substr = substratum; limestone substr = limestone substratum; Dual classes in Ohio, such as A/D, B/D, C/D are given for drained or undrained condition; No Eval. = No evaluation performed.

1. Hydrologic Soil Groups (HSGs) for Ohio (for undisturbed naturally-occurring sites) were updated in 2008 and should be used rather than HSGs from earlier publications (http://www.oh.nrcs.usda.gov/technical/soils/OH_hsg.pdf or contact the USDA Natural Resources Conservation Service in Columbus, Ohio). You may also utilize www.OhioERIN.com to find site specific HSG (unaltered).

Soil Map Unit Component	HSG ¹	Post-Const HSG
Ravenna	D	D
Rawson	D	D
Red Hook	B/D	D
Reesville	B/D	D
Remsen	D	D
Rensselaer	B/D	D
Rensselaer (till substr)	B/D	D
Richland	B	D
Riddles	B	C
Rigley	A	A
Rigley Variant	A	No Eval.
Rimer	A/D	D
Rimer (deep phase)	A/D	D
Risingsun	C/D	D
Ritchey	D	D
Rittman	D	D
Rockmill	B/D	D
Rodman	A	A
Rollersville	C/D	D
Romeo	D	D
Roselms	D	D
Ross	B	C
Ross Variant	D	D
Rosburg	B	D
Rossmoyne	C	D
Roundhead	C/D	D
Rush	B	D
Russell	B	D
Russell (bedrock substr)	B	No Eval.
Sandusky	B/D	D
Sarahsville	D	D
Saranac	C/D	D
Sardinia	B	D
Savona	B/D	D
Saylesville	C	D
Schaffemaker	A	D
Schaffer	C/D	D
Scioto	B	No Eval.
Sciotoville	C	D
Sebring	C/D	D
Sebring Variant	C/D	D
Secondcreek	C/D	D
Sees	C	D
Senecaville	C/D	D

Soil Map Unit Component	HSG ¹	Post-Const HSG
Seward	A	D
Sewell	A	No Eval.
Shawtown	B	No Eval.
Sheffield	D	D
Shelocta	B	D
Shinrock	C	D
Shinrock Variant (Henry)	C/D	D
Shinrock (till substr)	C/D	D
Shoals	B/D	D
Shoals (mod deep)	C/D	D
Shoals Variant	C/D	D
Sisson	B	D
Skidmore	A	C
Skidmore Variant	A	No Eval.
Sleeth	B/D	D
Sligo	B	No Eval.
Sloan	B/D	D
Sloan (mod deep)	B/D	D
Sloan Variant	B/D	D
Sloan (limestone substr)	B/D	D
Smothers	C/D	D
Spargus	B	No Eval.
Sparta	A	No Eval.
Spinks	A	A
Spinks (deep to limestone)	A	No Eval.
St. Clair	D	D
Stafford	A/D	D
Stanhope	B/D	D
Steinsburg	B	D
Stendal	B/D	D
Stone	C/D	D
Stonelick	A	B
Strawn	D	D
Stringley	A	No Eval.
Sugarvalley	B/D	D
Summitville	C	D
Swanton	B/D	D
Switzerland	B	No Eval.
Taggart	C/D	D
Tarhollow	C	D
Tarlton	C	No Eval.
Tedrow	A/D	D
Tedrow (till substr) (Wood)	C/D	D
Teegarden	C/D	D

Notes: CL = clay loam; L = loam; substr = substratum; limestone substr = limestone substratum; Dual classes in Ohio, such as A/D, B/D, C/D are given for drained or undrained condition; No Eval. = No evaluation performed.

1. Hydrologic Soil Groups (HSGs) for Ohio (for undisturbed naturally-occurring sites) were updated in 2008 and should be used rather than HSGs from earlier publications (http://www.oh.nrcs.usda.gov/technical/soils/OH_hsg.pdf or contact the USDA Natural Resources Conservation Service in Columbus, Ohio). You may also utilize www.OhioERIN.com to find site specific HSG (unaltered).

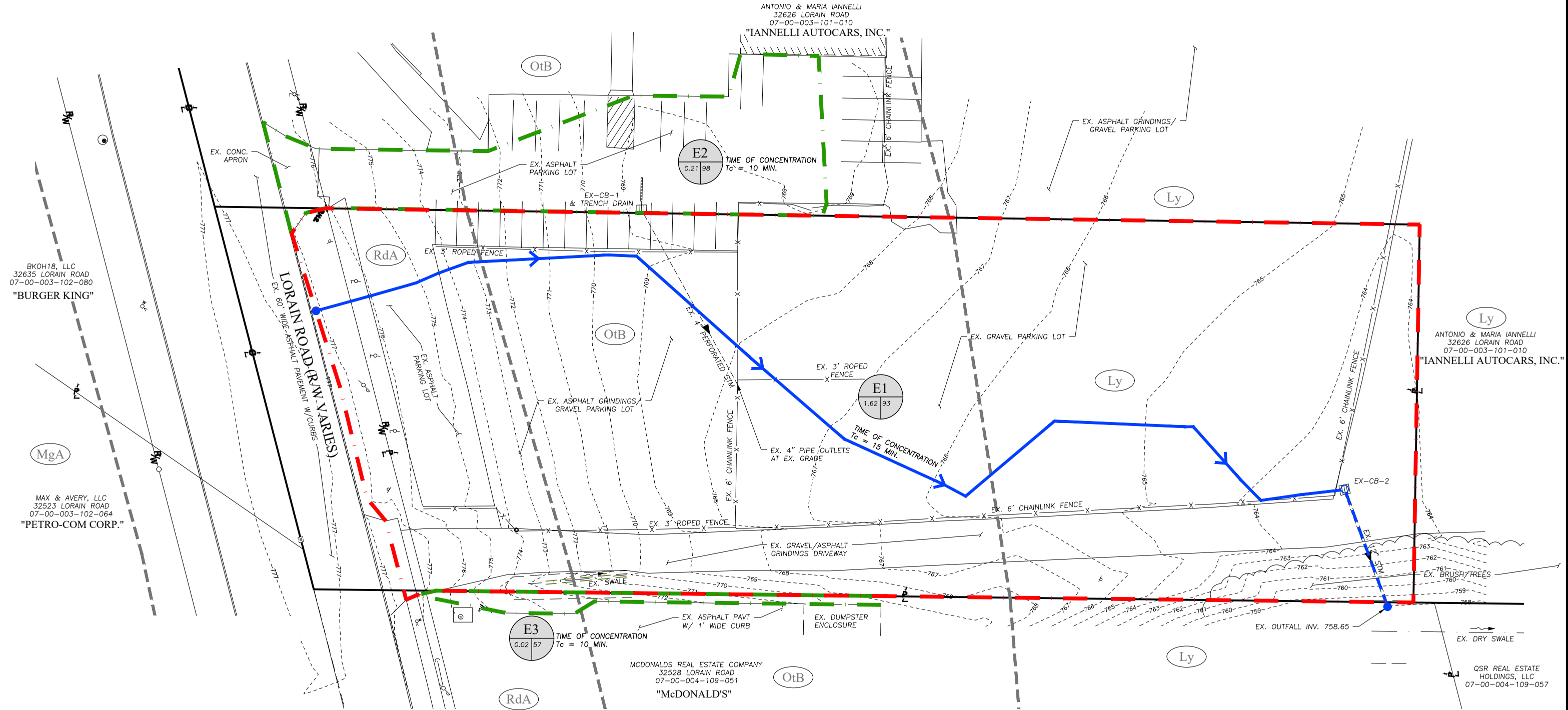
Appendix B

Pre Developed Conditions

DR-A Existing Drainage Map

Existing Conditions Hydrographs ($E1 + E2 + E3 \Rightarrow 1L$)

J:\25800 Culvers North Ridgeville\DOCUMENTS\Drainage\05 - 1 DRA-Ex Drainage Map.dwg, Plotted: Aug 29, 2022 - 10:43am

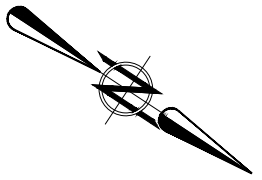


EXISTING DRAINAGE MAP

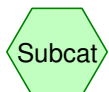
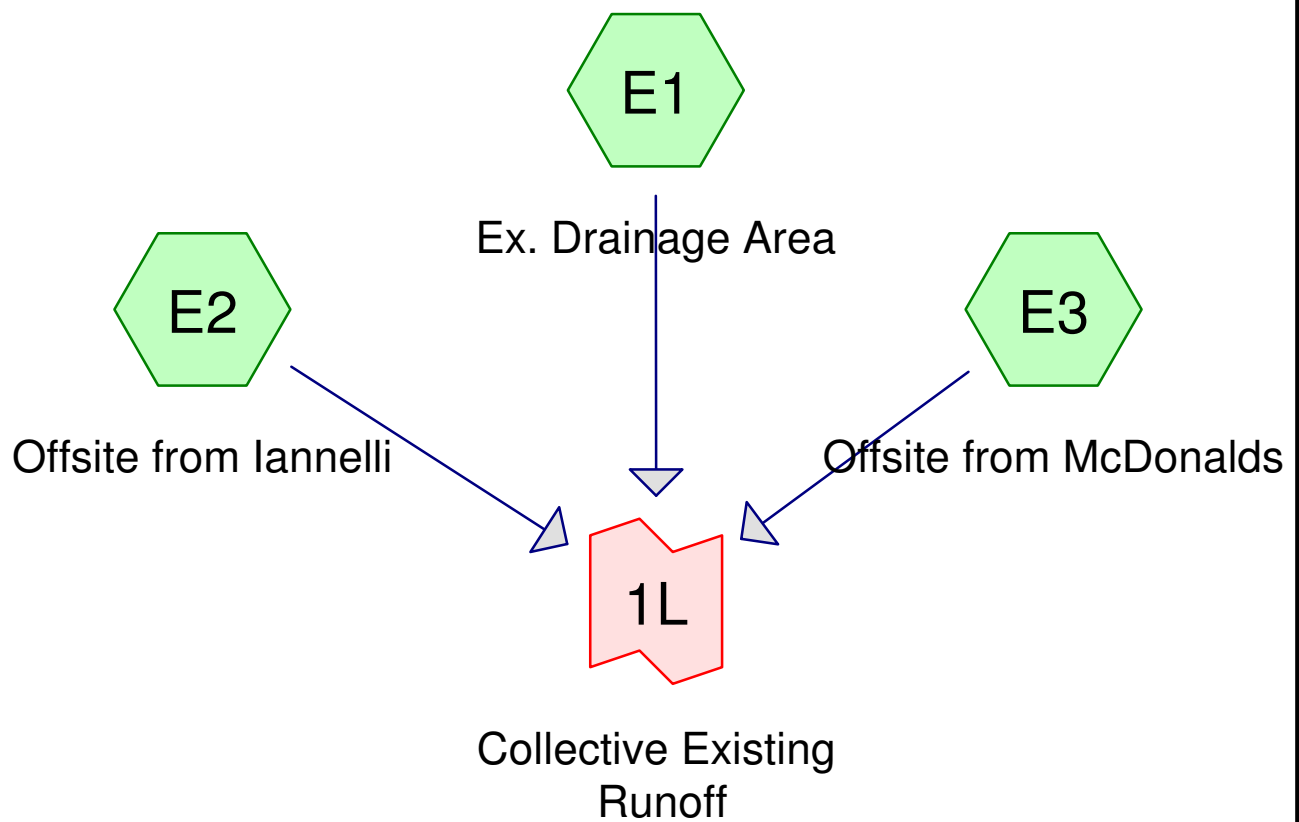
SCALE: 1"=40'

LEGEND

- SOIL TYPE
- SOIL TYPE BOUNDARY
- FLOW PATH
- PROPERTY LINE
- DRAINAGE BOUNDARY
- EXISTING CONTOURS
- DENOTES SUB-BASIN DESCRIPTION
A DENOTES BASIN ID
X.XX DENOTES BASIN AREA (ACRES)
YY DENOTES CURVE NUMBER



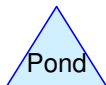
DR-A



Subcat



Reach



Pond



Link

Routing Diagram for Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company, Printed 9/12/2022
HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 2

Summary for Subcatchment E1: Ex. Drainage Area

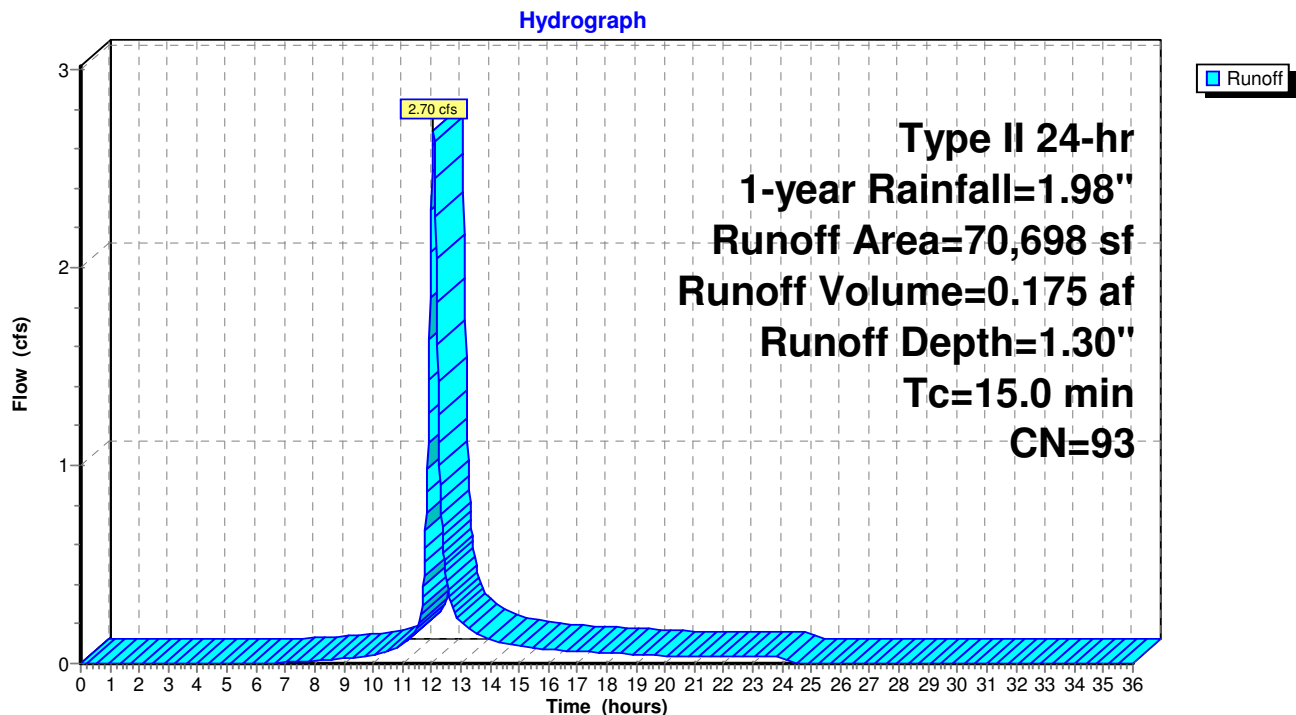
Runoff = 2.70 cfs @ 12.07 hrs, Volume= 0.175 af, Depth= 1.30"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

	Area (sf)	CN	Description
*	29,710	98	Paved parking, HSG A,C,D
*	32,055	96	Gravel surface, HSG A, D
	1,912	39	>75% Grass cover, Good, HSG A
	3,592	74	>75% Grass cover, Good, HSG C
	1,968	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	70,698	93	Weighted Average
	40,988		57.98% Pervious Area
	29,710		42.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment E1: Ex. Drainage Area



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 3

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.50 cfs @ 12.01 hrs, Volume= 0.030 af, Depth= 1.75"

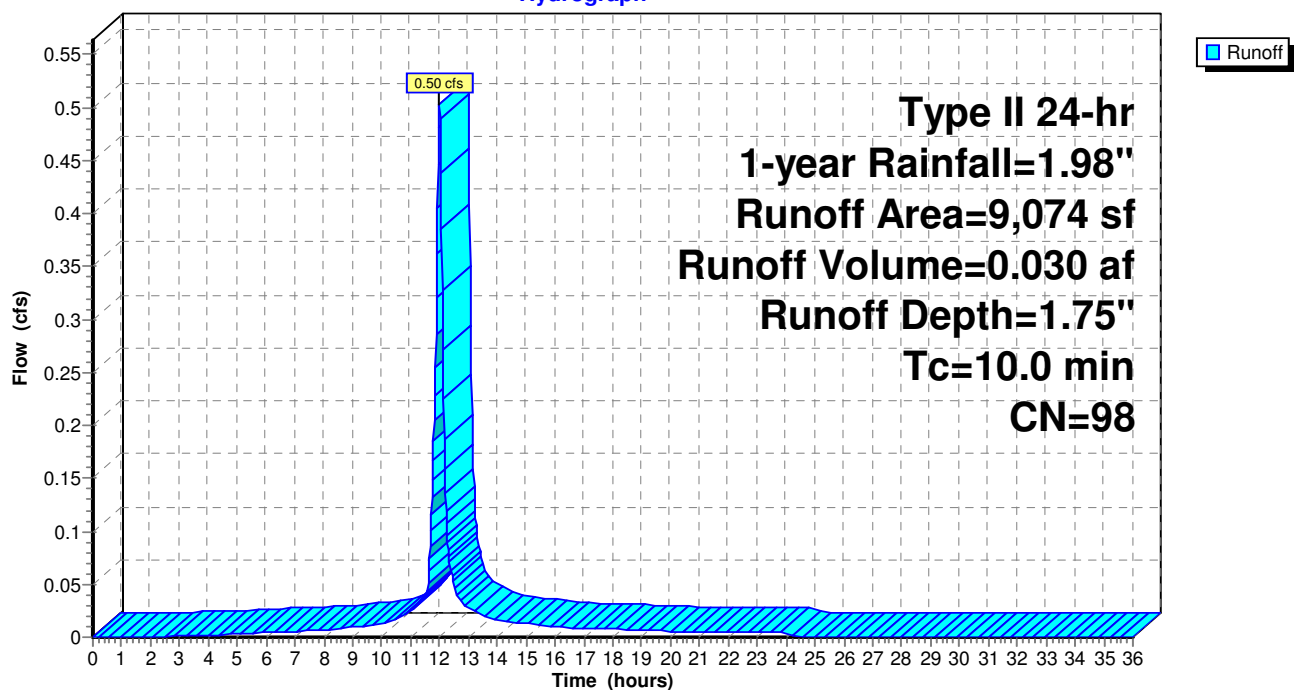
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 4

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.00 cfs @ 18.10 hrs, Volume= 0.000 af, Depth= 0.02"

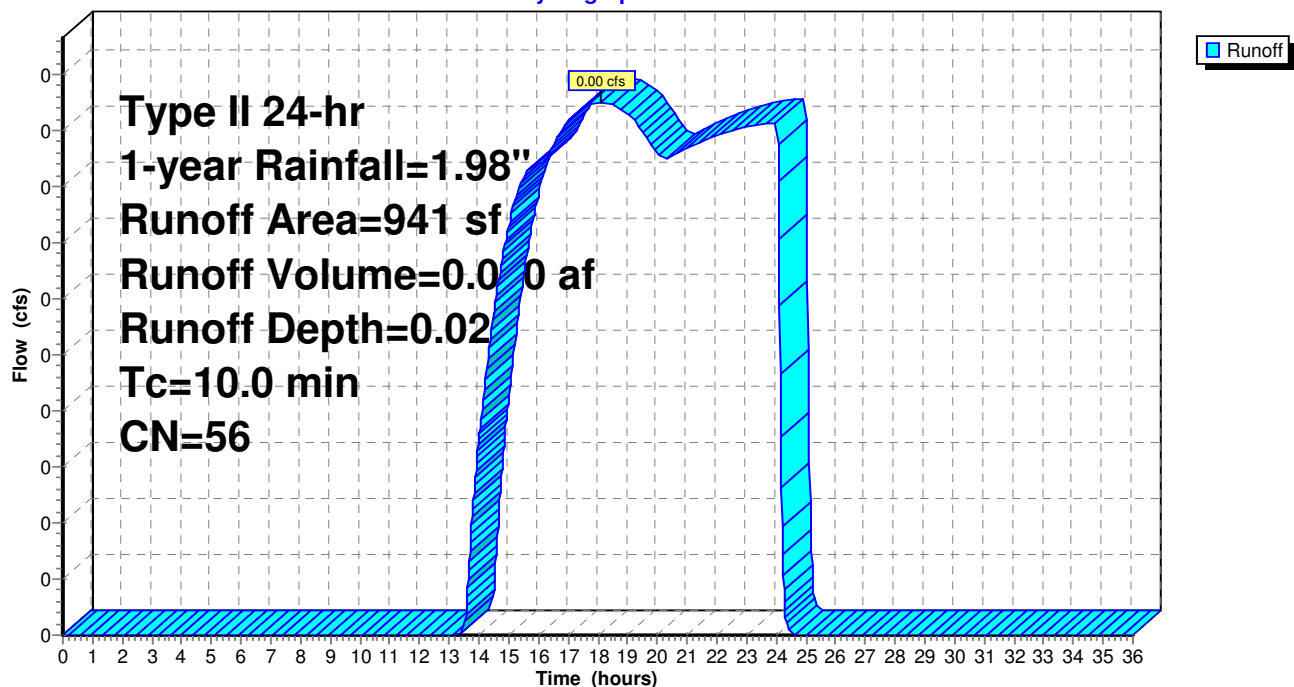
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

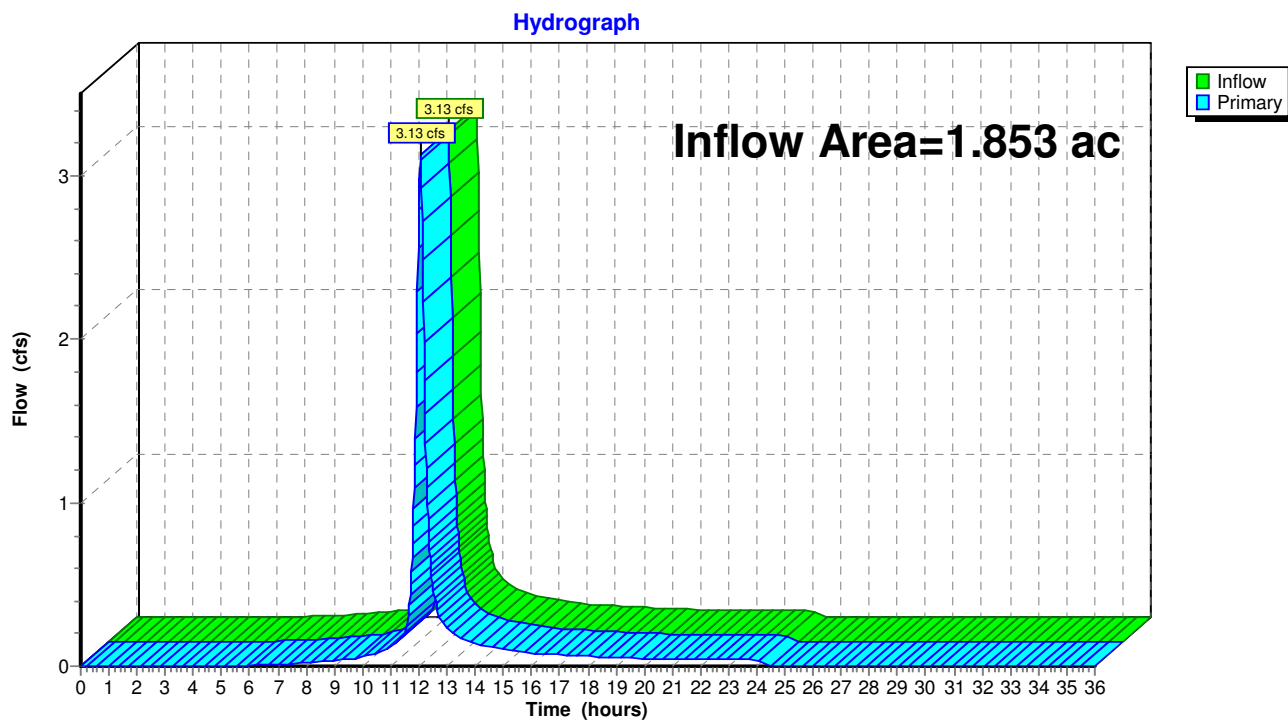
Page 5

Summary for Link 1L: Collective Existing Runoff

Inflow Area = 1.853 ac, 48.05% Impervious, Inflow Depth = 1.33" for 1-year event
Inflow = 3.13 cfs @ 12.06 hrs, Volume= 0.206 af
Primary = 3.13 cfs @ 12.06 hrs, Volume= 0.206 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 1L: Collective Existing Runoff



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 6

Summary for Subcatchment E1: Ex. Drainage Area

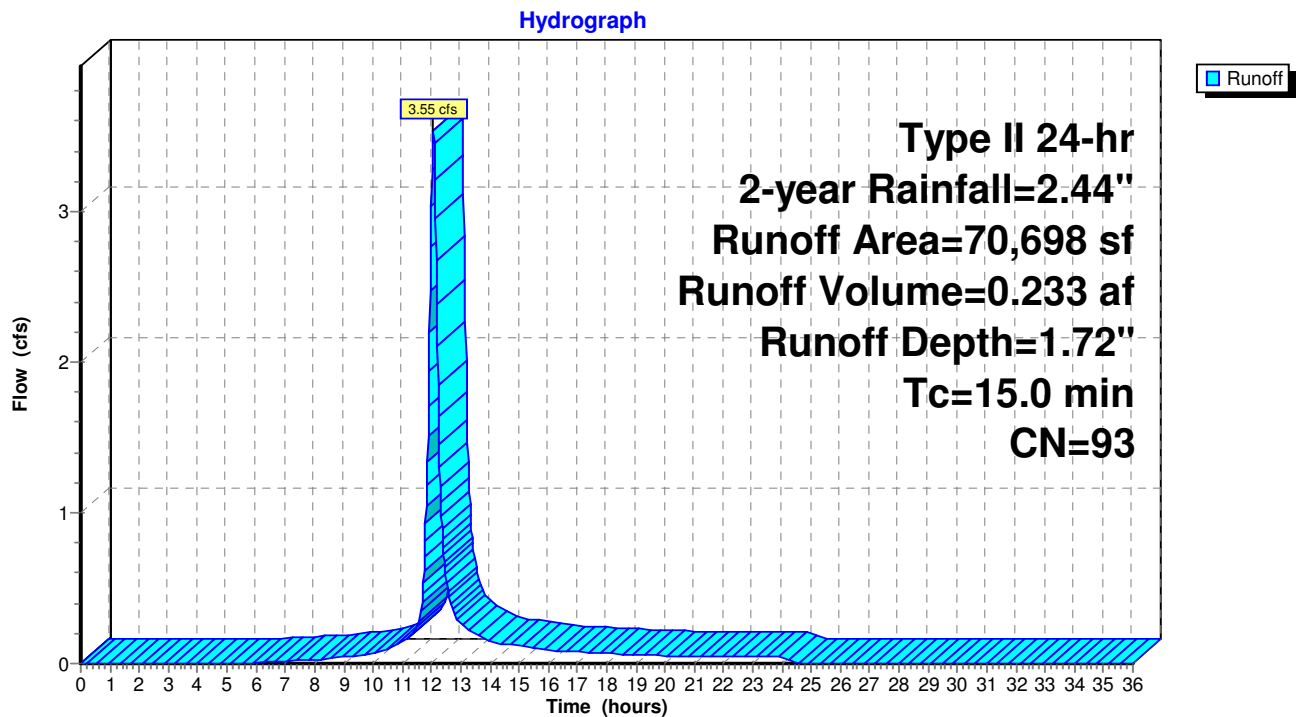
Runoff = 3.55 cfs @ 12.07 hrs, Volume= 0.233 af, Depth= 1.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

	Area (sf)	CN	Description
*	29,710	98	Paved parking, HSG A,C,D
*	32,055	96	Gravel surface, HSG A, D
	1,912	39	>75% Grass cover, Good, HSG A
	3,592	74	>75% Grass cover, Good, HSG C
	1,968	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	70,698	93	Weighted Average
	40,988		57.98% Pervious Area
	29,710		42.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment E1: Ex. Drainage Area



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 7

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.63 cfs @ 12.01 hrs, Volume= 0.038 af, Depth= 2.21"

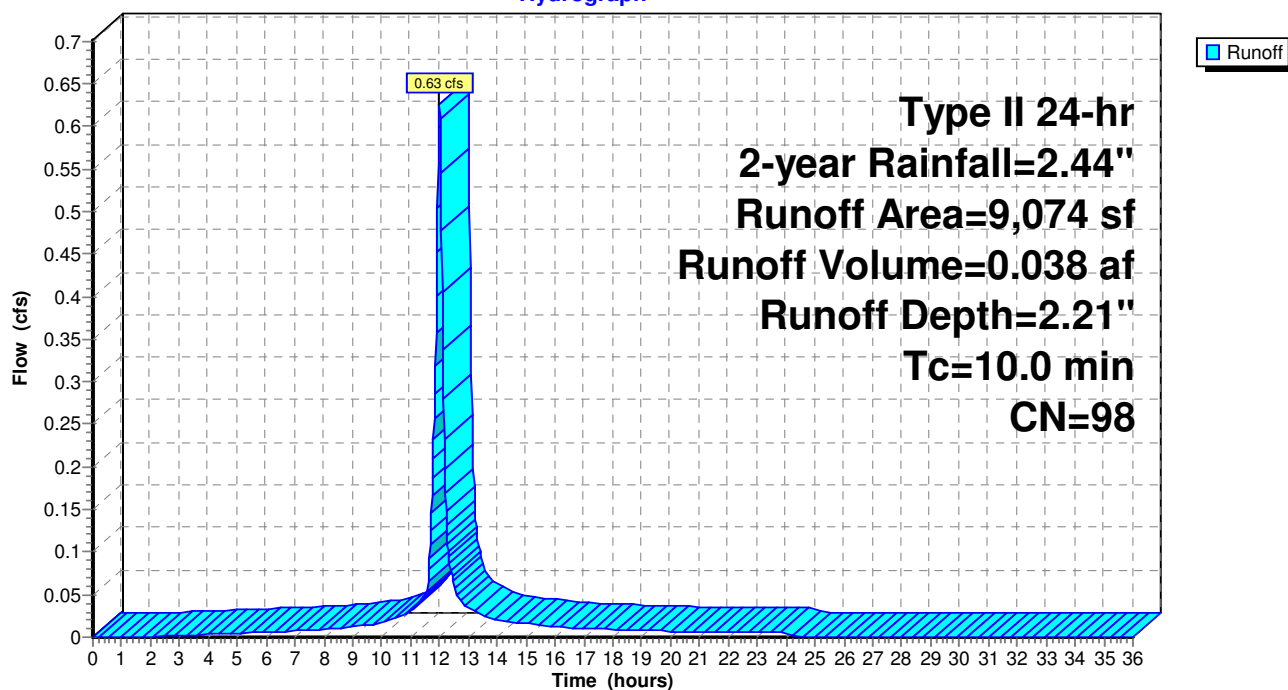
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.00 cfs @ 12.47 hrs, Volume= 0.000 af, Depth= 0.09"

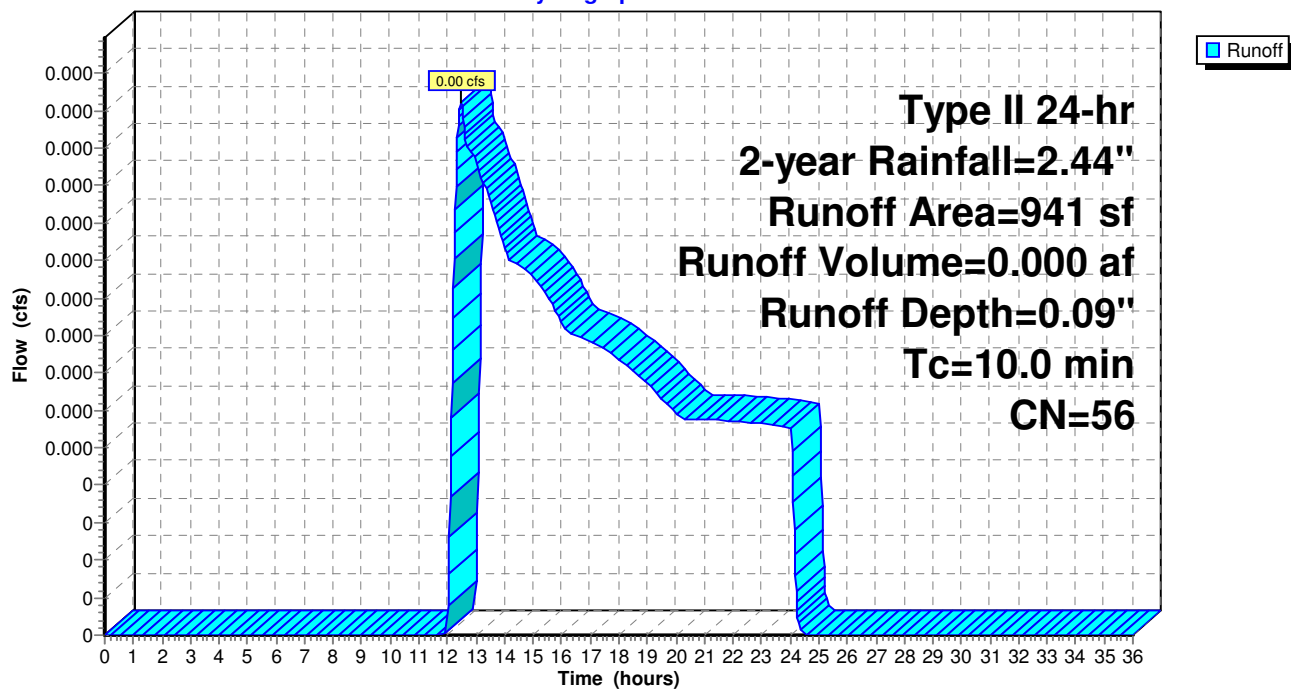
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

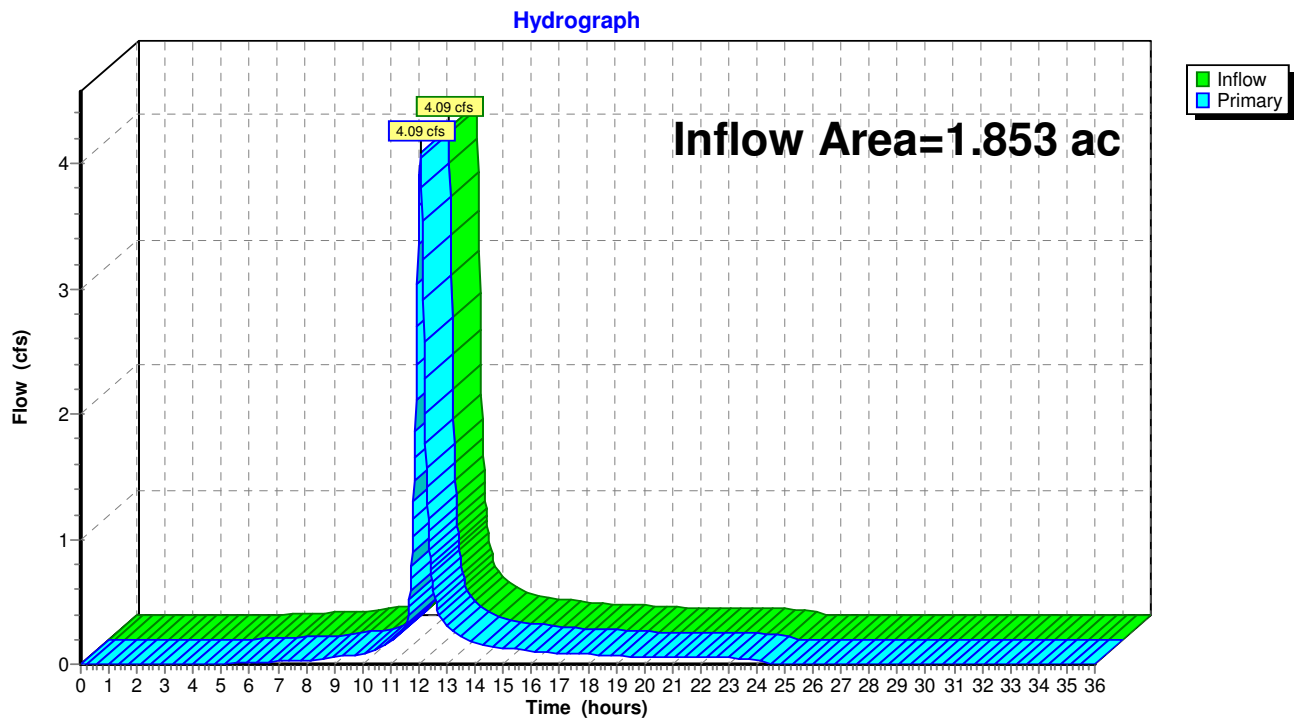
Hydrograph



Summary for Link 1L: Collective Existing Runoff

Inflow Area = 1.853 ac, 48.05% Impervious, Inflow Depth = 1.76" for 2-year event
Inflow = 4.09 cfs @ 12.06 hrs, Volume= 0.272 af
Primary = 4.09 cfs @ 12.06 hrs, Volume= 0.272 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 1L: Collective Existing Runoff

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 10

Summary for Subcatchment E1: Ex. Drainage Area

Runoff = 4.69 cfs @ 12.07 hrs, Volume= 0.313 af, Depth= 2.31"

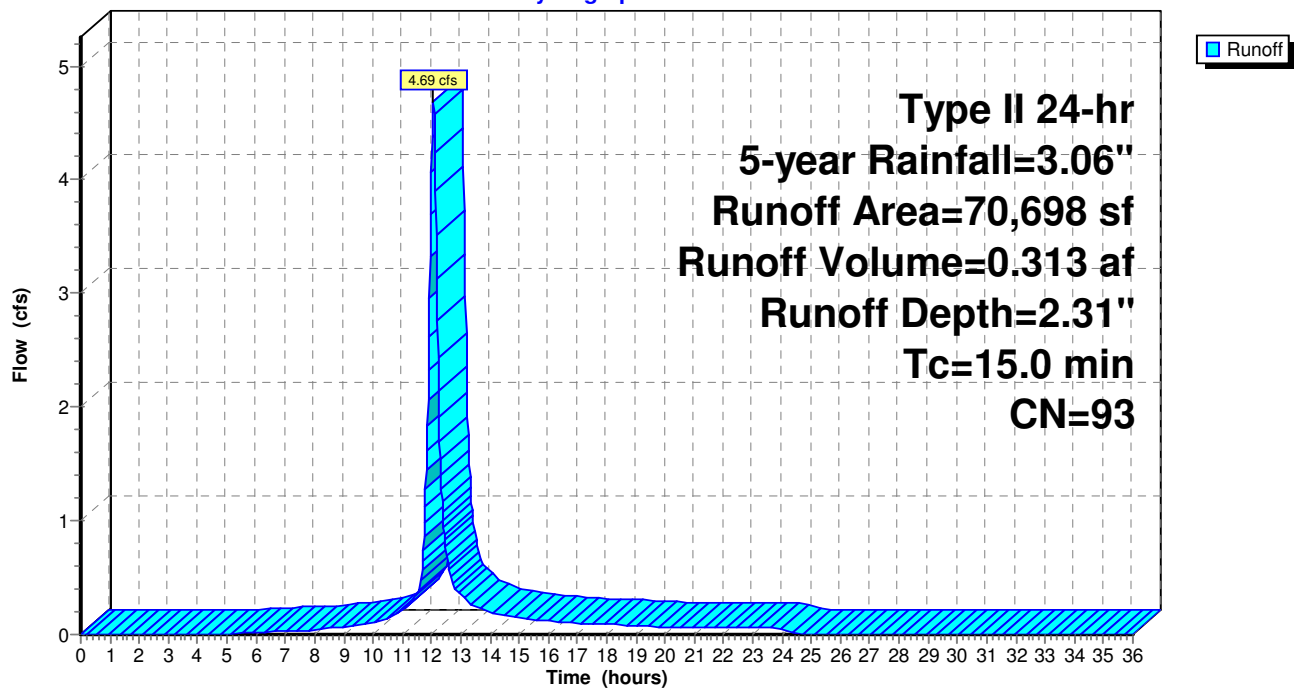
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 5-year Rainfall=3.06"

	Area (sf)	CN	Description
*	29,710	98	Paved parking, HSG A,C,D
*	32,055	96	Gravel surface, HSG A, D
	1,912	39	>75% Grass cover, Good, HSG A
	3,592	74	>75% Grass cover, Good, HSG C
	1,968	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	70,698	93	Weighted Average
	40,988		57.98% Pervious Area
	29,710		42.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment E1: Ex. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 11

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.79 cfs @ 12.01 hrs, Volume= 0.049 af, Depth= 2.83"

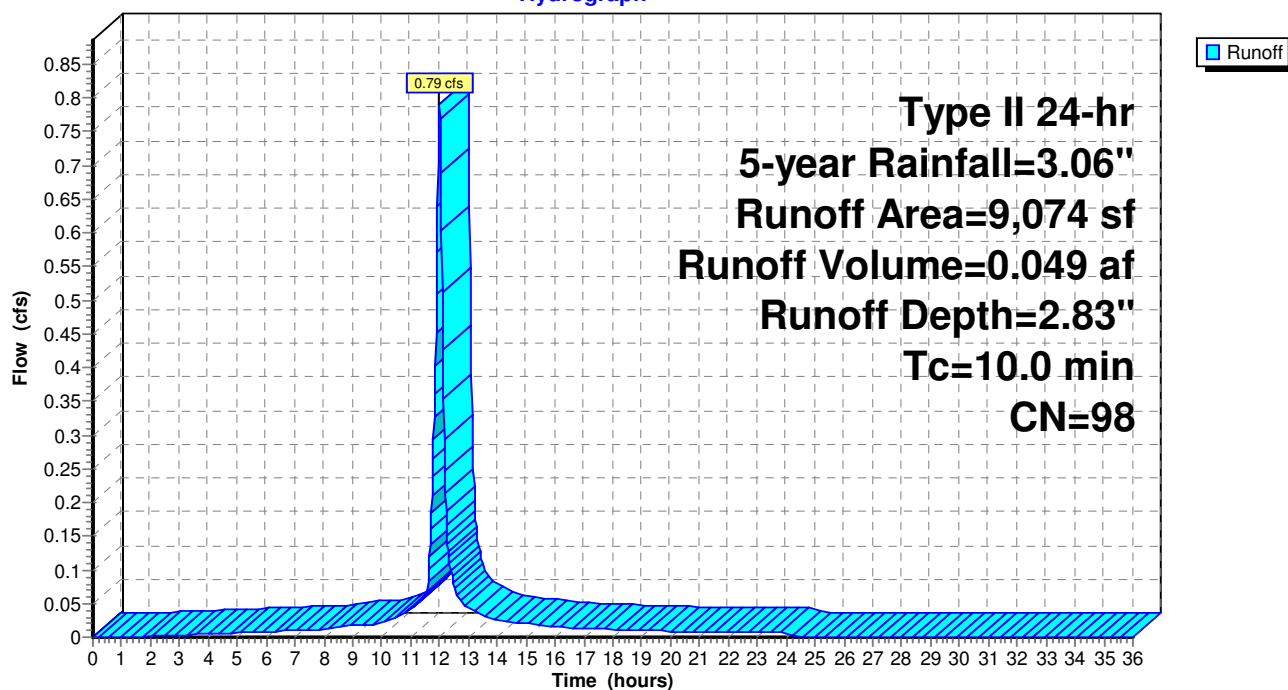
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 5-year Rainfall=3.06"

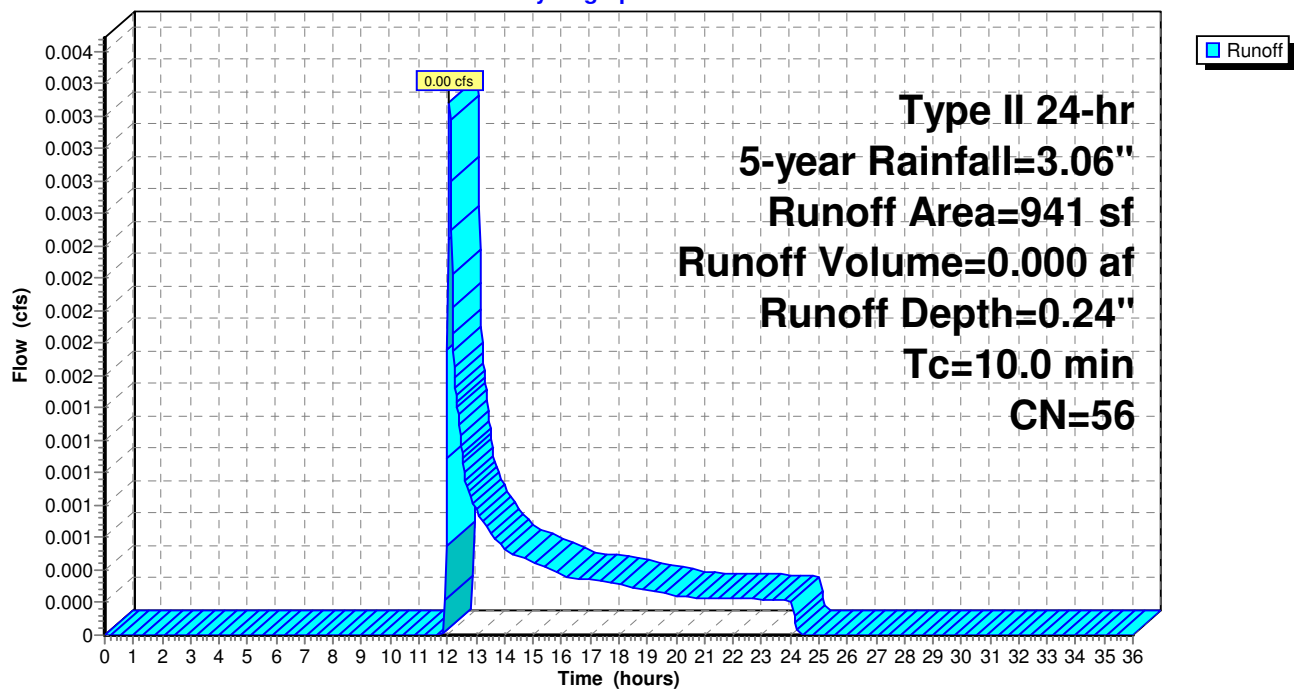
	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph

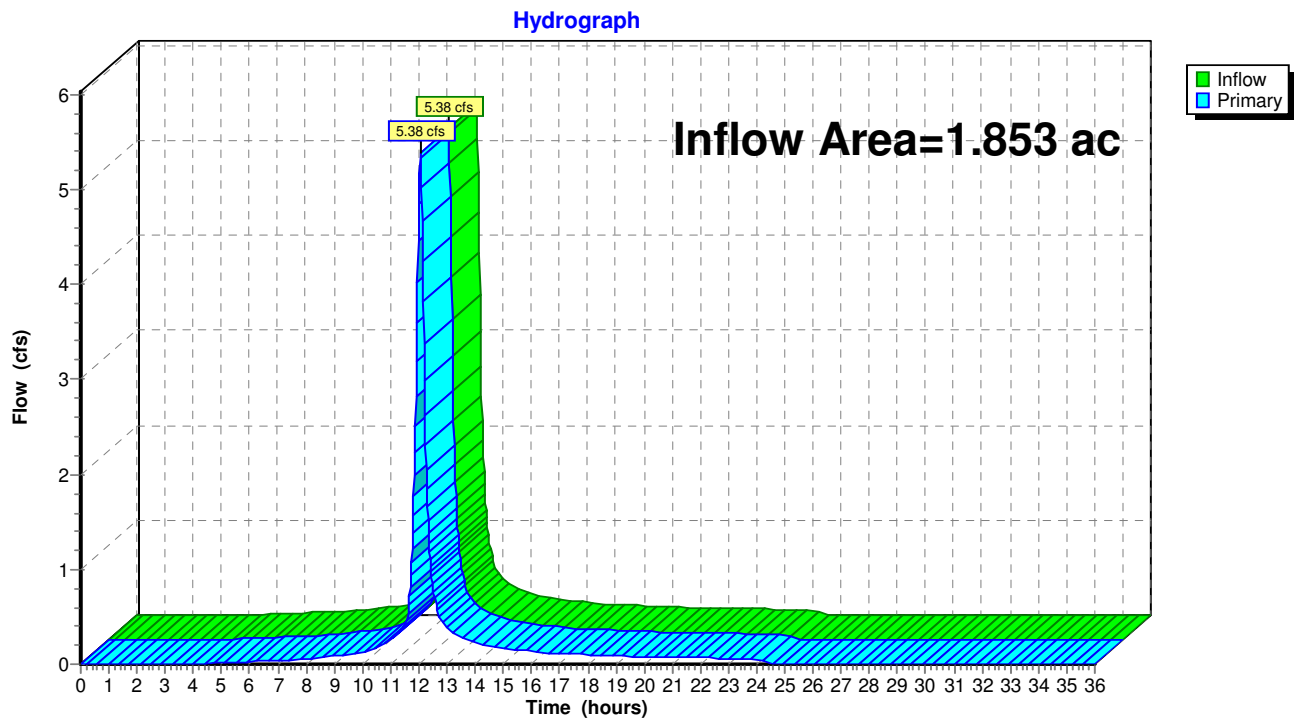




Summary for Link 1L: Collective Existing Runoff

Inflow Area = 1.853 ac, 48.05% Impervious, Inflow Depth = 2.35" for 5-year event
Inflow = 5.38 cfs @ 12.05 hrs, Volume= 0.362 af
Primary = 5.38 cfs @ 12.05 hrs, Volume= 0.362 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 1L: Collective Existing Runoff

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 14

Summary for Subcatchment E1: Ex. Drainage Area

Runoff = 5.60 cfs @ 12.06 hrs, Volume= 0.376 af, Depth= 2.78"

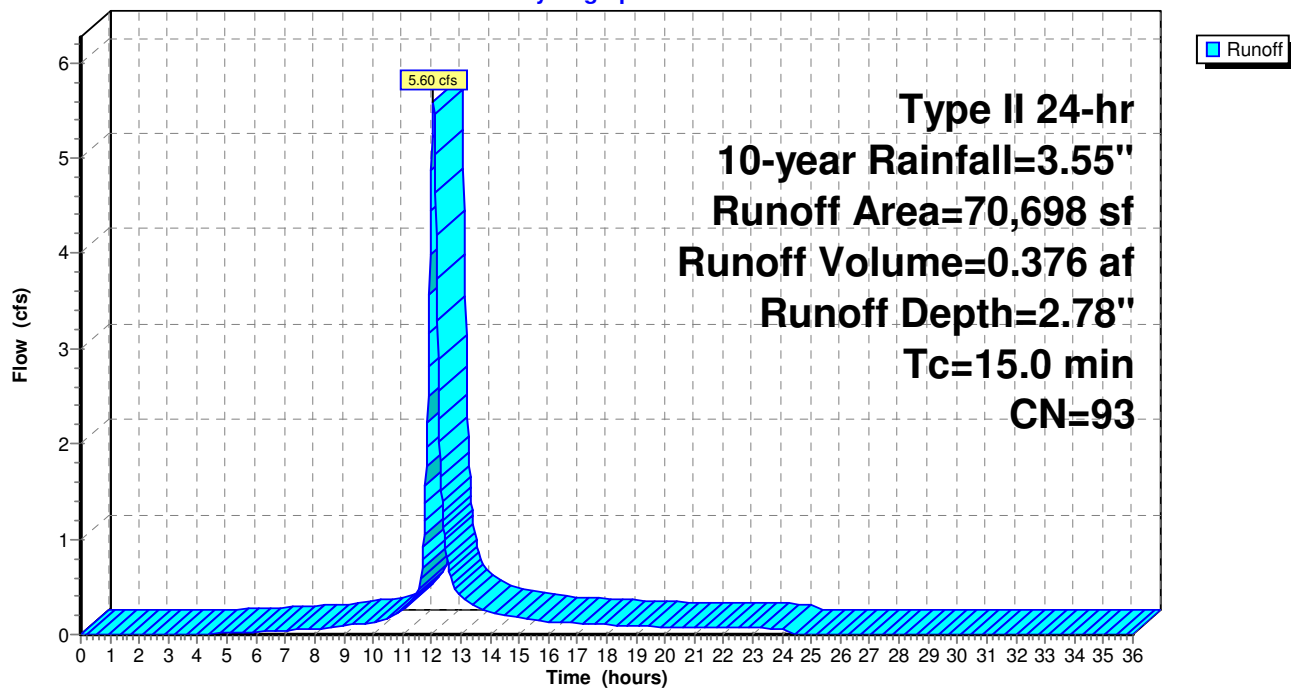
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

	Area (sf)	CN	Description
*	29,710	98	Paved parking, HSG A,C,D
*	32,055	96	Gravel surface, HSG A, D
	1,912	39	>75% Grass cover, Good, HSG A
	3,592	74	>75% Grass cover, Good, HSG C
	1,968	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	70,698	93	Weighted Average
	40,988		57.98% Pervious Area
	29,710		42.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment E1: Ex. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 15

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.92 cfs @ 12.01 hrs, Volume= 0.058 af, Depth= 3.32"

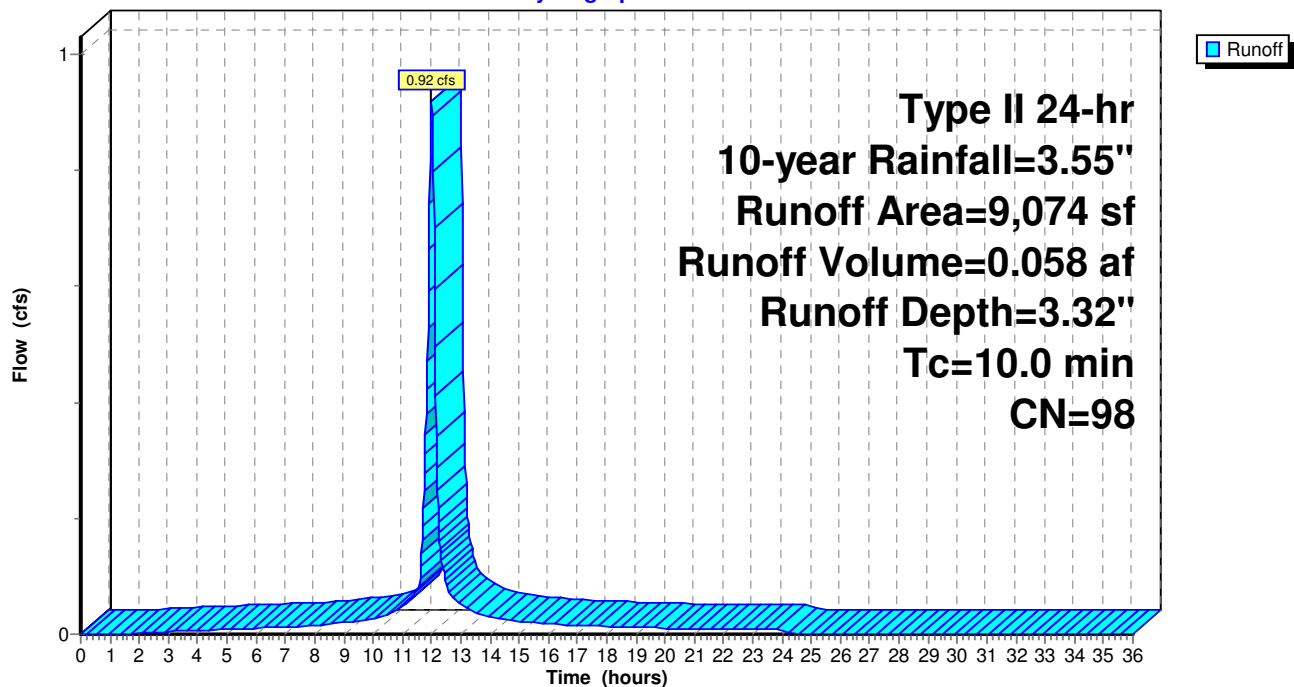
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 16

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.01 cfs @ 12.05 hrs, Volume= 0.001 af, Depth= 0.40"

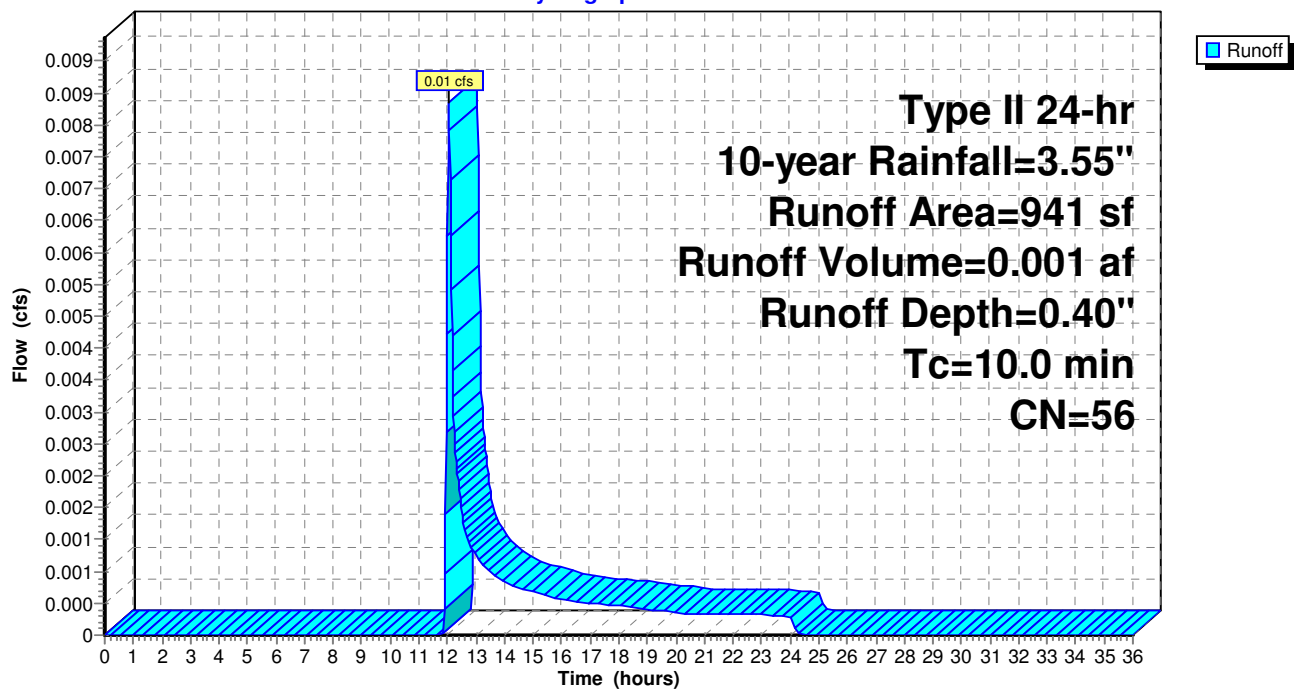
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

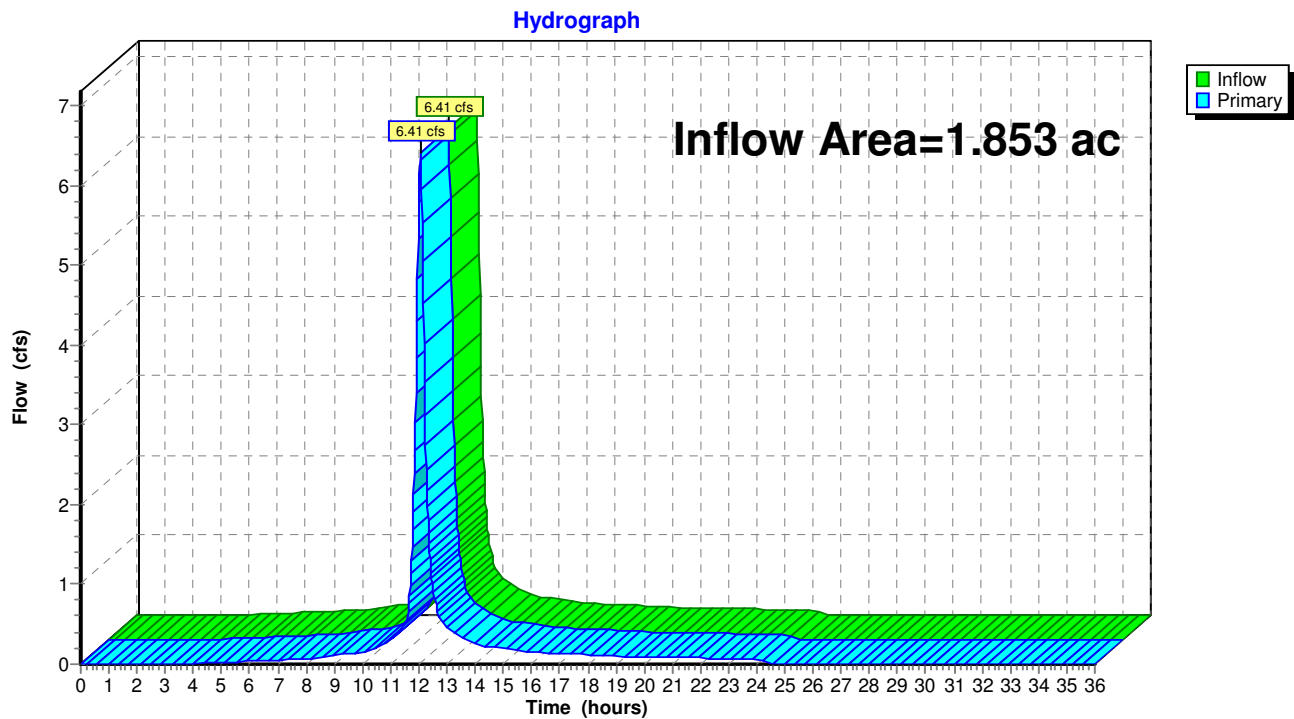
Hydrograph



Summary for Link 1L: Collective Existing Runoff

Inflow Area = 1.853 ac, 48.05% Impervious, Inflow Depth = 2.82" for 10-year event
Inflow = 6.41 cfs @ 12.05 hrs, Volume= 0.435 af
Primary = 6.41 cfs @ 12.05 hrs, Volume= 0.435 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 1L: Collective Existing Runoff

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 18

Summary for Subcatchment E1: Ex. Drainage Area

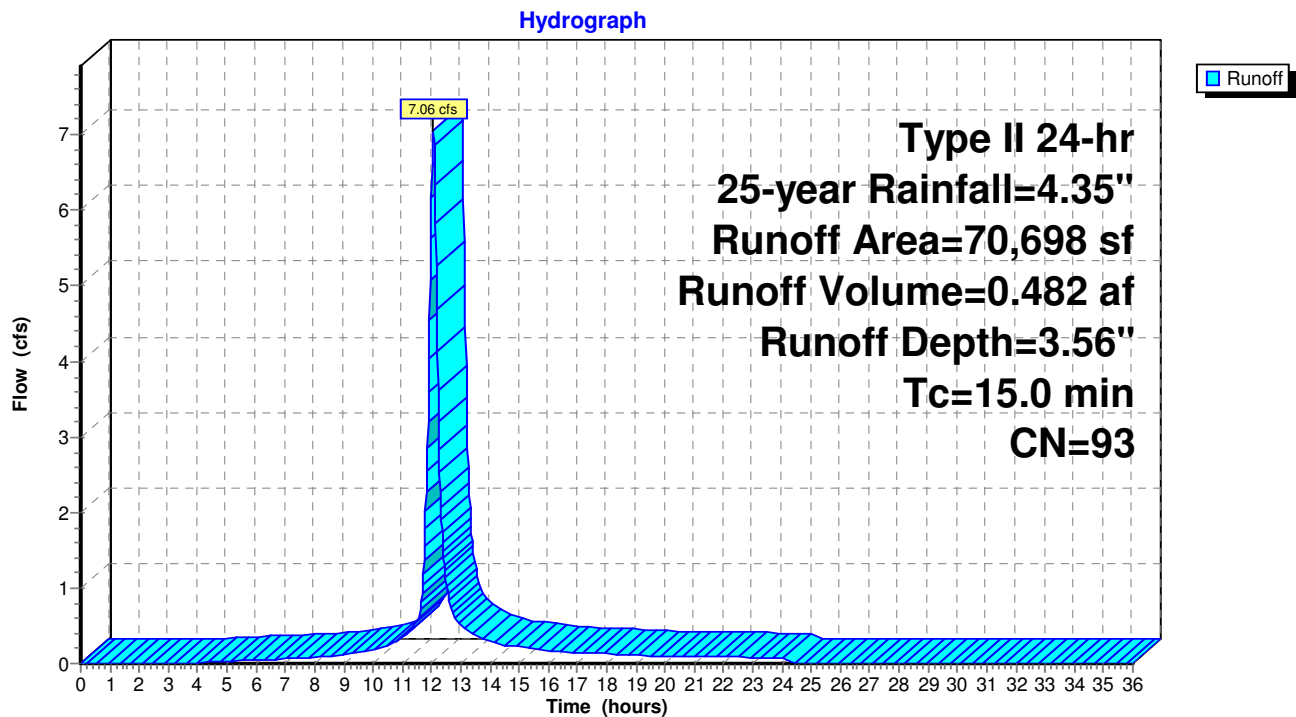
Runoff = 7.06 cfs @ 12.06 hrs, Volume= 0.482 af, Depth= 3.56"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

	Area (sf)	CN	Description
*	29,710	98	Paved parking, HSG A,C,D
*	32,055	96	Gravel surface, HSG A, D
	1,912	39	>75% Grass cover, Good, HSG A
	3,592	74	>75% Grass cover, Good, HSG C
	1,968	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	70,698	93	Weighted Average
	40,988		57.98% Pervious Area
	29,710		42.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment E1: Ex. Drainage Area



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 19

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.13 cfs @ 12.01 hrs, Volume= 0.071 af, Depth= 4.11"

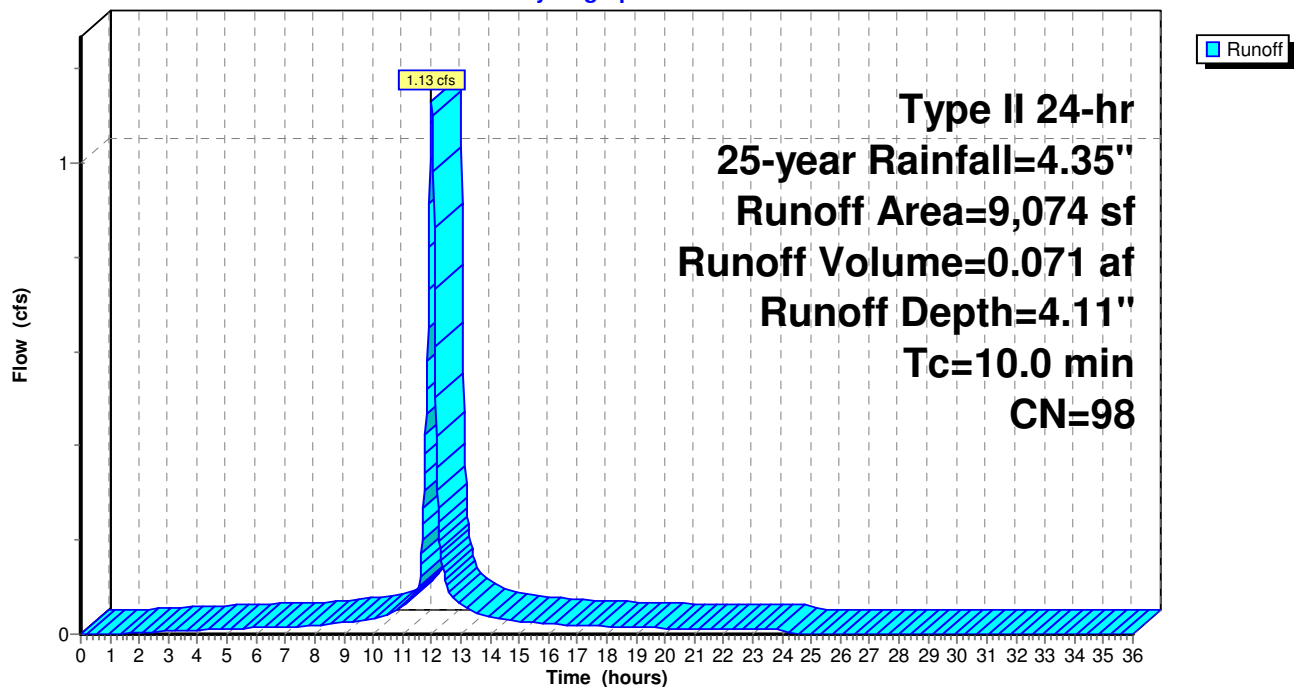
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 20

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.02 cfs @ 12.04 hrs, Volume= 0.001 af, Depth= 0.73"

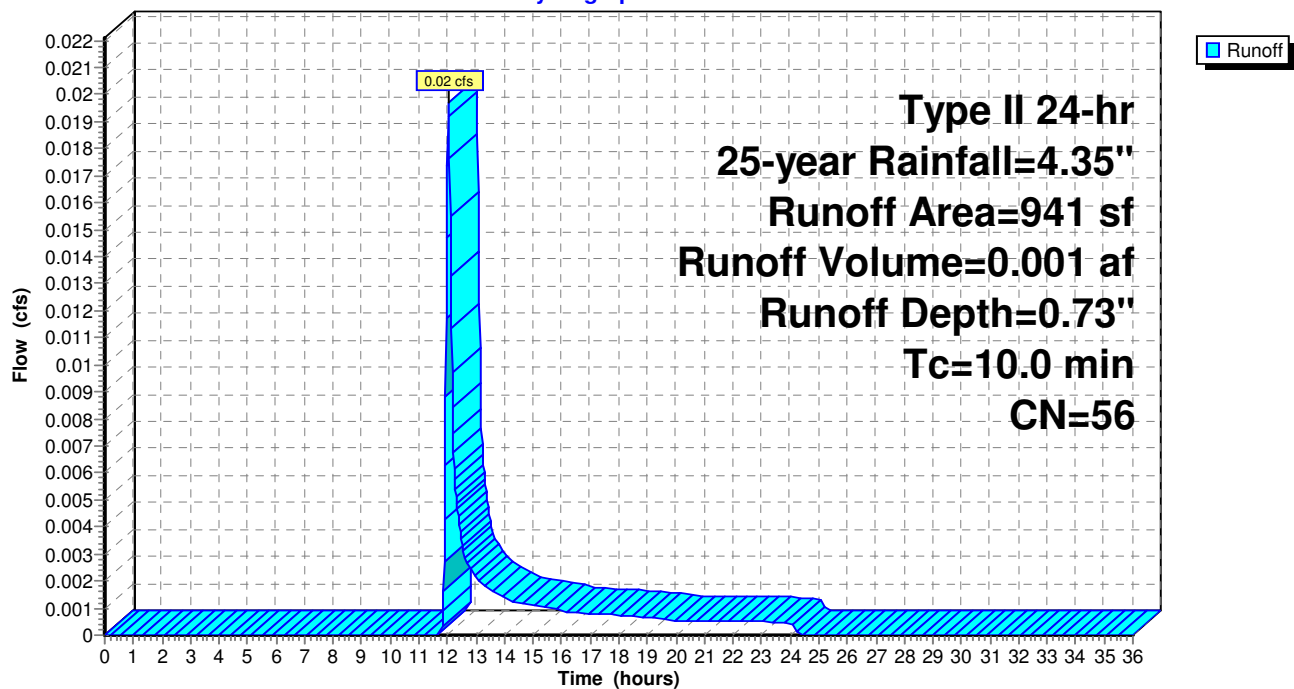
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

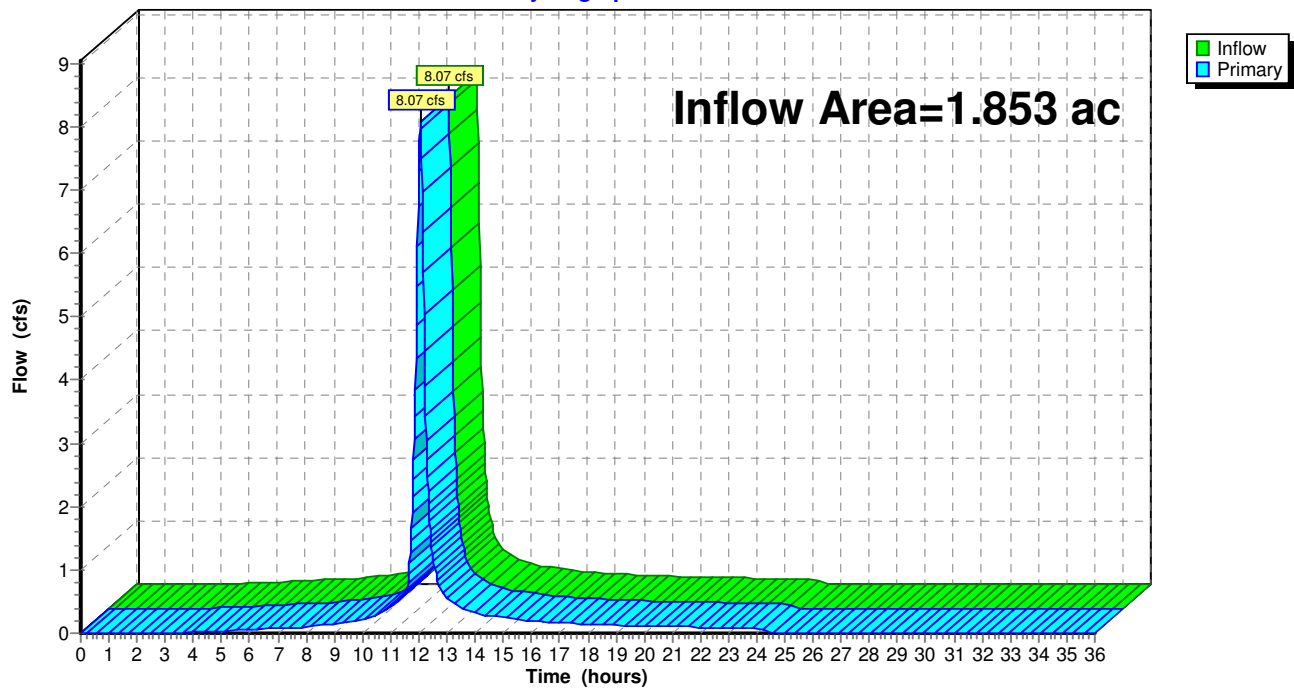
Hydrograph



Summary for Link 1L: Collective Existing Runoff

Inflow Area = 1.853 ac, 48.05% Impervious, Inflow Depth = 3.59" for 25-year event
Inflow = 8.07 cfs @ 12.05 hrs, Volume= 0.554 af
Primary = 8.07 cfs @ 12.05 hrs, Volume= 0.554 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 1L: Collective Existing Runoff**Hydrograph**

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 22

Summary for Subcatchment E1: Ex. Drainage Area

Runoff = 8.39 cfs @ 12.06 hrs, Volume= 0.578 af, Depth= 4.28"

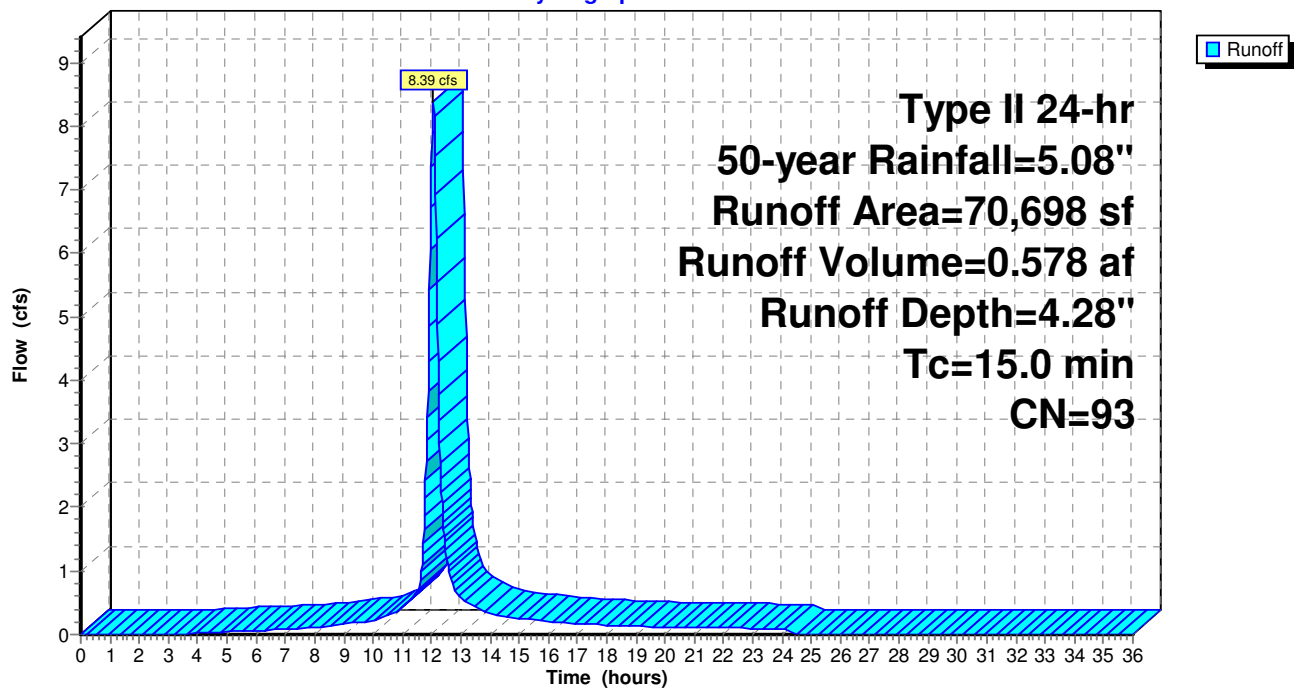
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

	Area (sf)	CN	Description
*	29,710	98	Paved parking, HSG A,C,D
*	32,055	96	Gravel surface, HSG A, D
	1,912	39	>75% Grass cover, Good, HSG A
	3,592	74	>75% Grass cover, Good, HSG C
	1,968	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	70,698	93	Weighted Average
	40,988		57.98% Pervious Area
	29,710		42.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment E1: Ex. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 23

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.32 cfs @ 12.01 hrs, Volume= 0.084 af, Depth= 4.84"

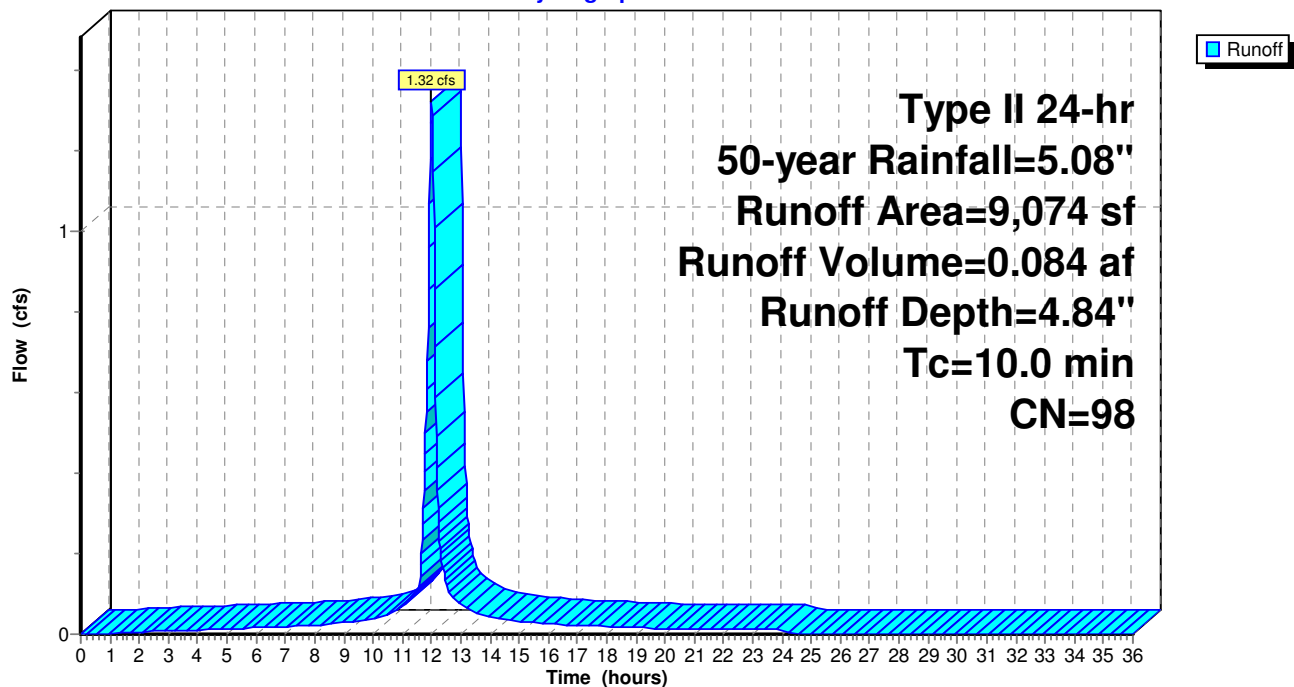
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 24

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.03 cfs @ 12.03 hrs, Volume= 0.002 af, Depth= 1.08"

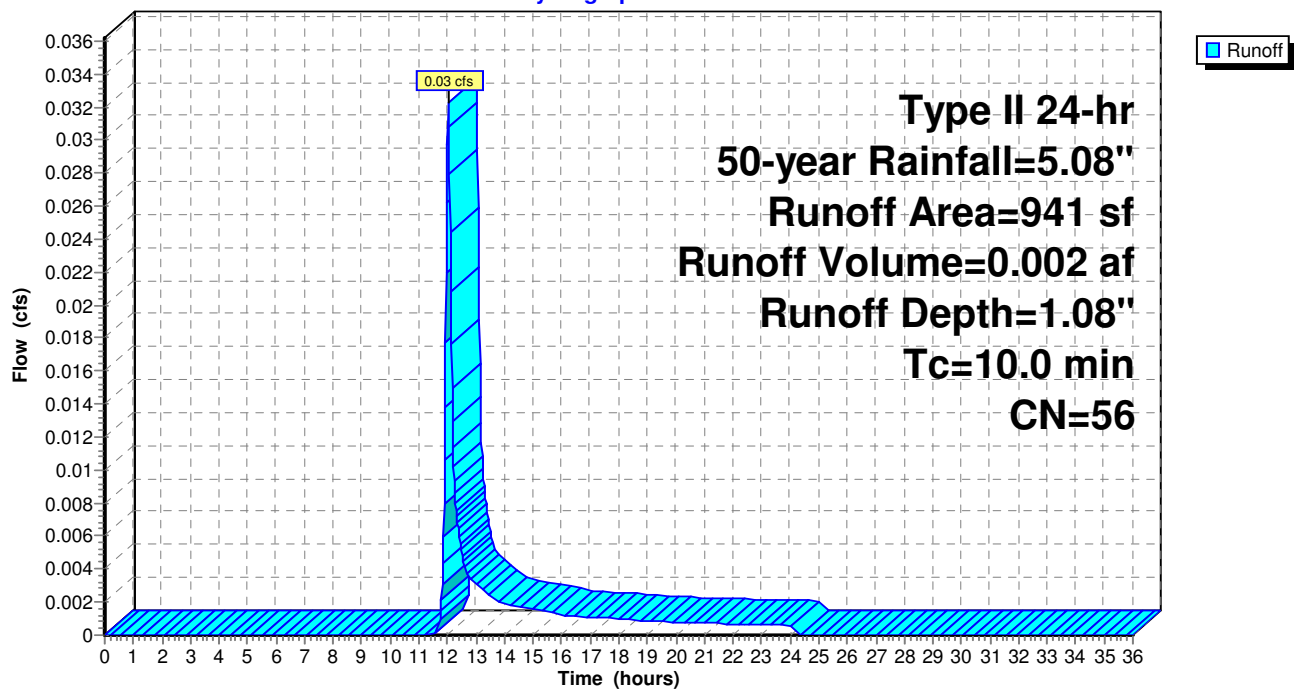
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

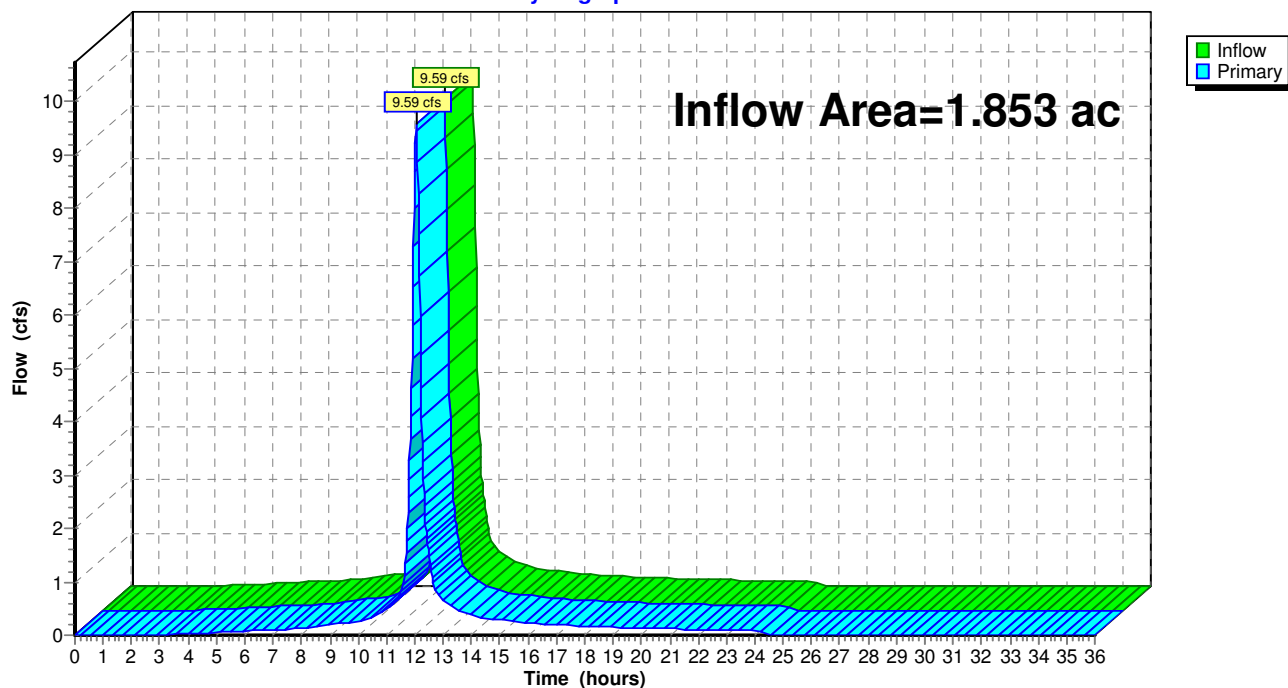
Hydrograph



Summary for Link 1L: Collective Existing Runoff

Inflow Area = 1.853 ac, 48.05% Impervious, Inflow Depth = 4.30" for 50-year event
Inflow = 9.59 cfs @ 12.05 hrs, Volume= 0.664 af
Primary = 9.59 cfs @ 12.05 hrs, Volume= 0.664 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 1L: Collective Existing Runoff**Hydrograph**

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 26

Summary for Subcatchment E1: Ex. Drainage Area

Runoff = 9.92 cfs @ 12.06 hrs, Volume= 0.690 af, Depth= 5.10"

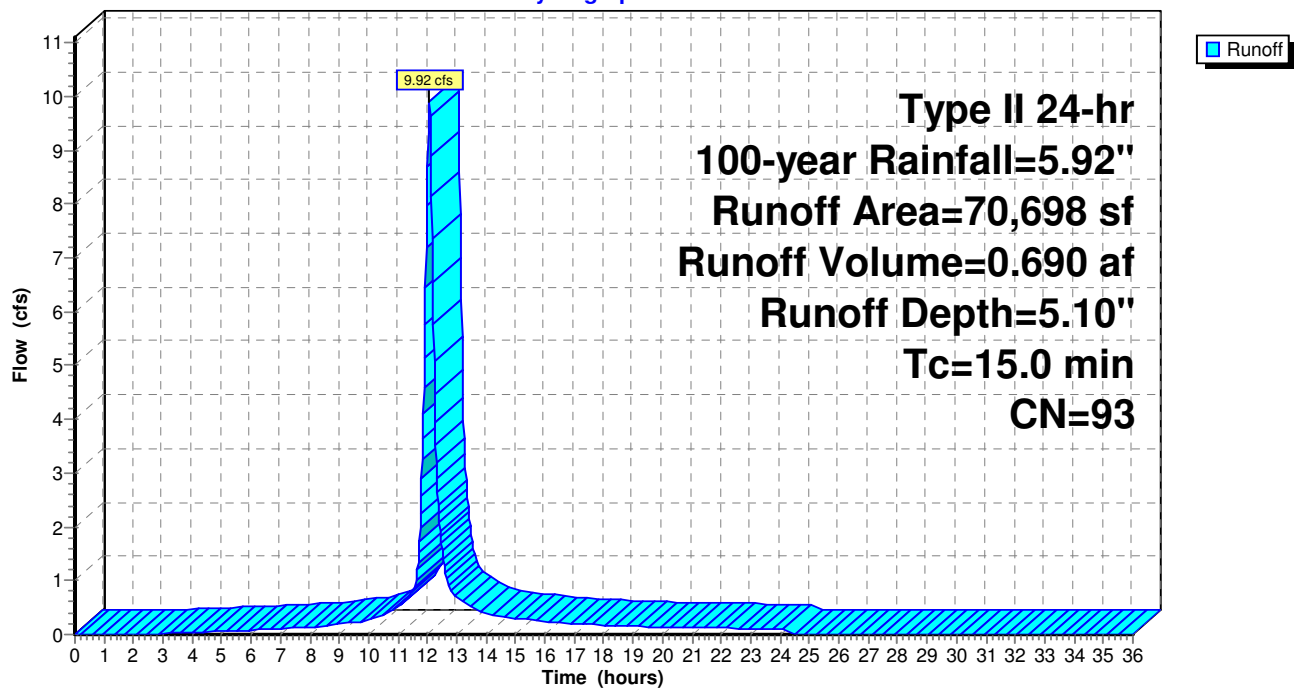
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

	Area (sf)	CN	Description
*	29,710	98	Paved parking, HSG A,C,D
*	32,055	96	Gravel surface, HSG A, D
	1,912	39	>75% Grass cover, Good, HSG A
	3,592	74	>75% Grass cover, Good, HSG C
	1,968	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	70,698	93	Weighted Average
	40,988		57.98% Pervious Area
	29,710		42.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
15.0					Direct Entry,

Subcatchment E1: Ex. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 27

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.55 cfs @ 12.01 hrs, Volume= 0.099 af, Depth= 5.68"

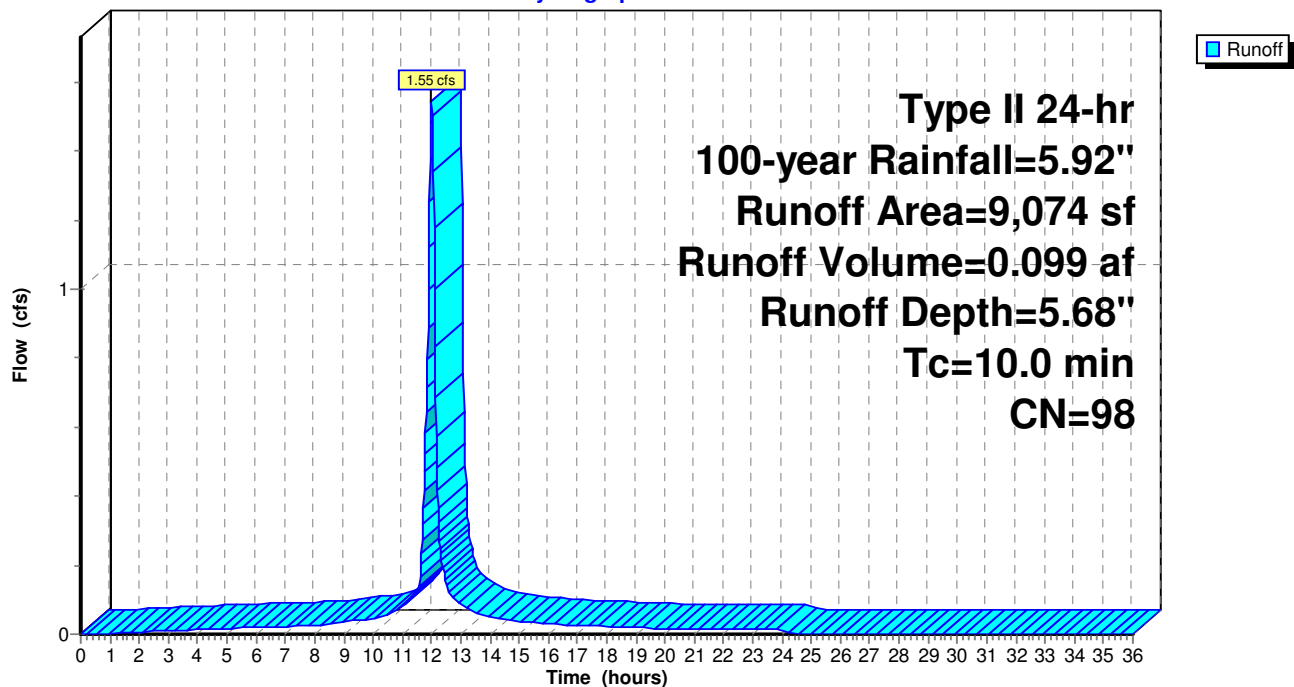
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 28

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.05 cfs @ 12.03 hrs, Volume= 0.003 af, Depth= 1.55"

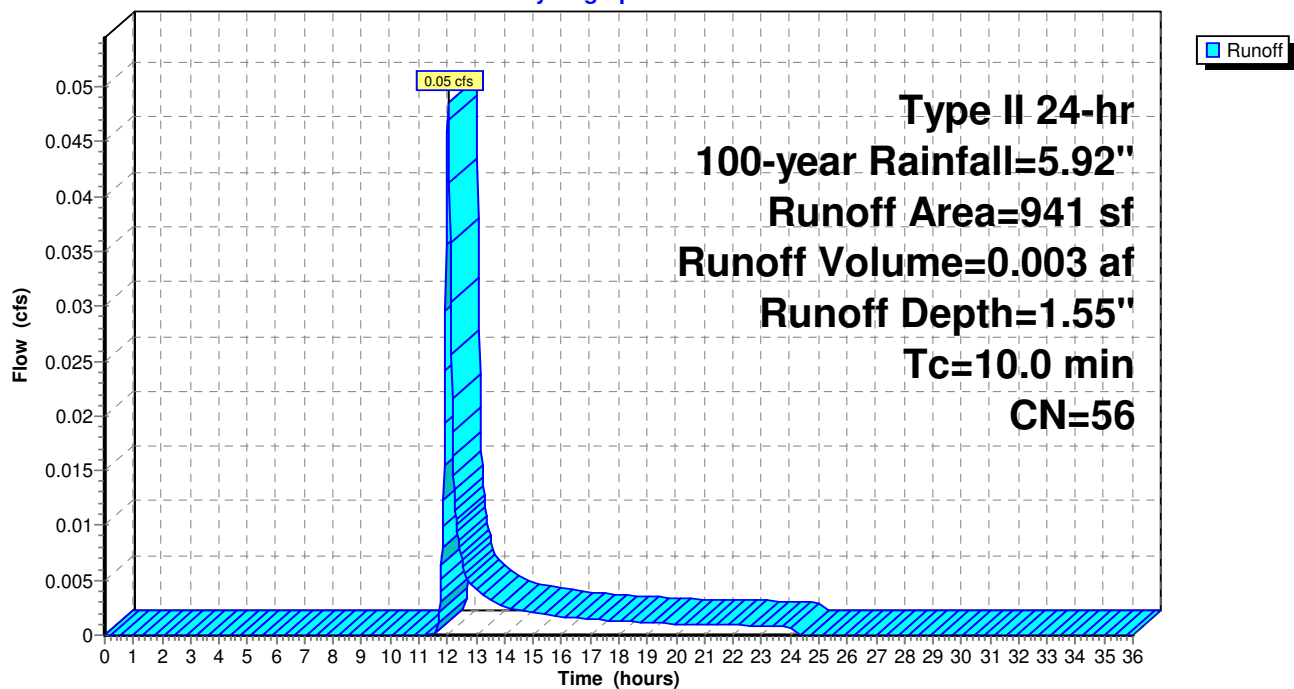
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

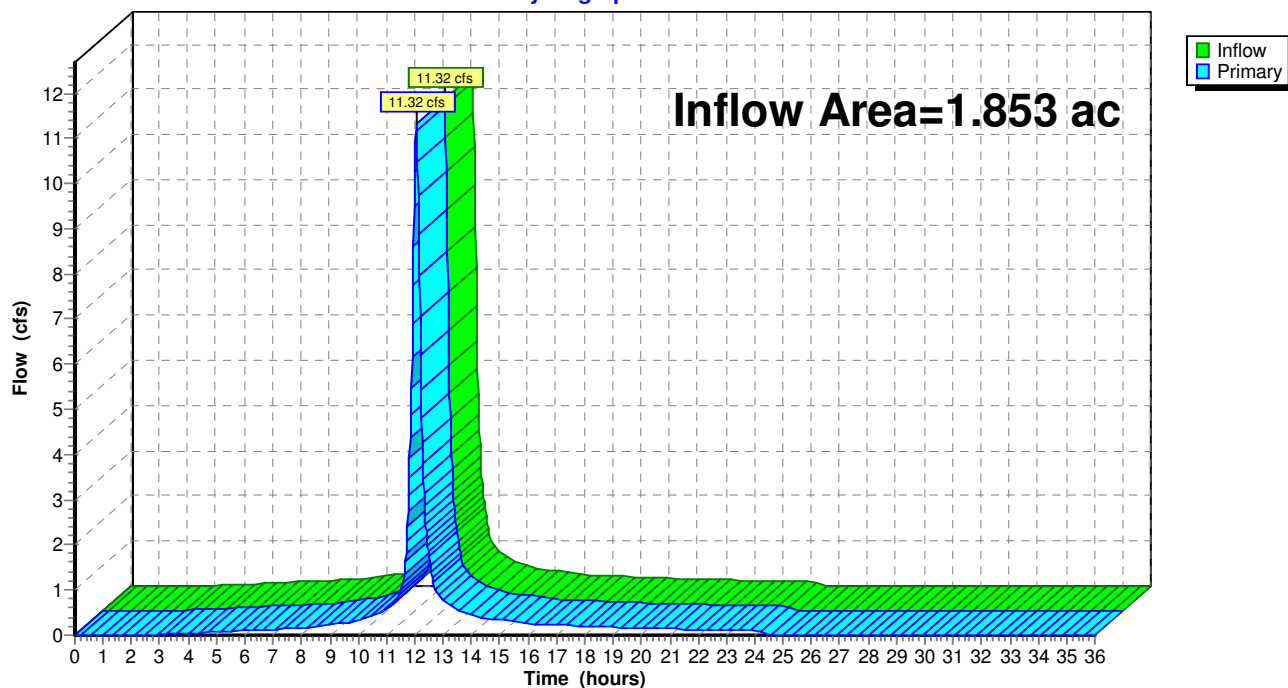
Hydrograph



Summary for Link 1L: Collective Existing Runoff

Inflow Area = 1.853 ac, 48.05% Impervious, Inflow Depth = 5.13" for 100-year event
Inflow = 11.32 cfs @ 12.05 hrs, Volume= 0.792 af
Primary = 11.32 cfs @ 12.05 hrs, Volume= 0.792 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

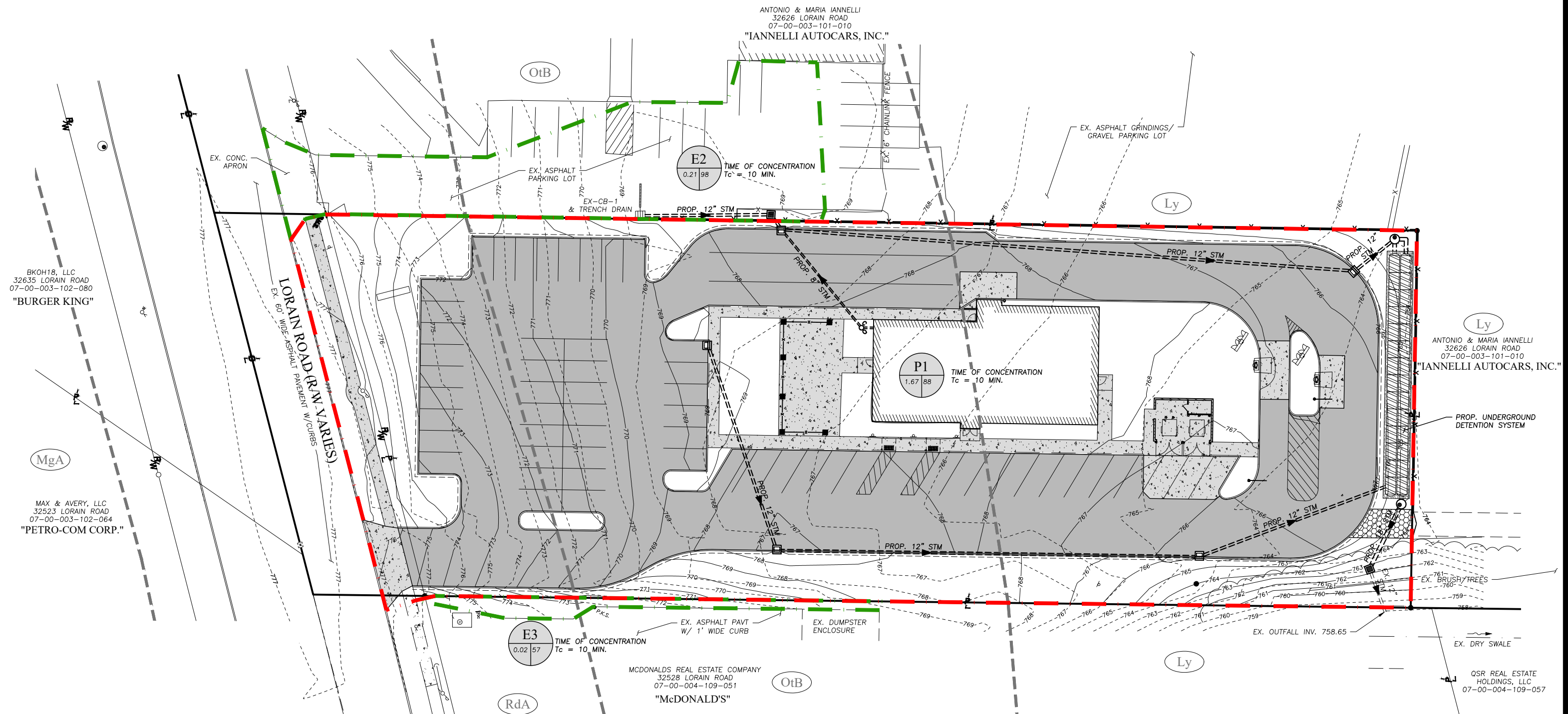
Link 1L: Collective Existing Runoff**Hydrograph**

Appendix C

Post Developed Conditions

DR-B Proposed Drainage Map

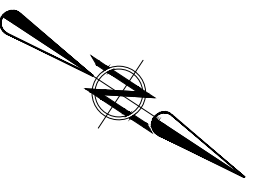
Proposed Conditions Hydrographs ($P1 + E2 + E3 \Rightarrow 2L$)



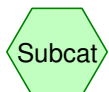
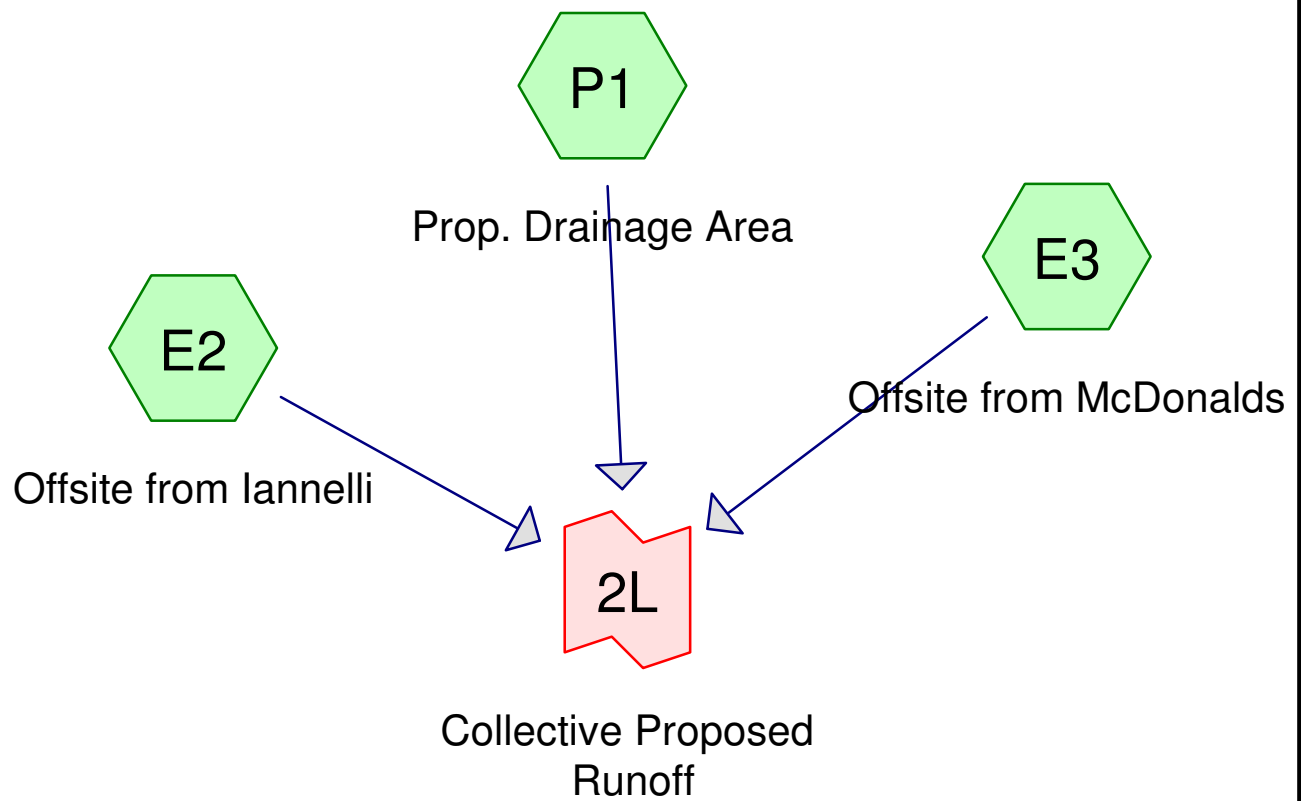
PROPOSED DRAINAGE MAP

HATCH LEGEND

LEGEND



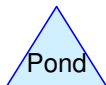
DR-B



Subcat



Reach



Pond



Link

Routing Diagram for Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company, Printed 9/12/2022
HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 2

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.50 cfs @ 12.01 hrs, Volume= 0.030 af, Depth= 1.75"

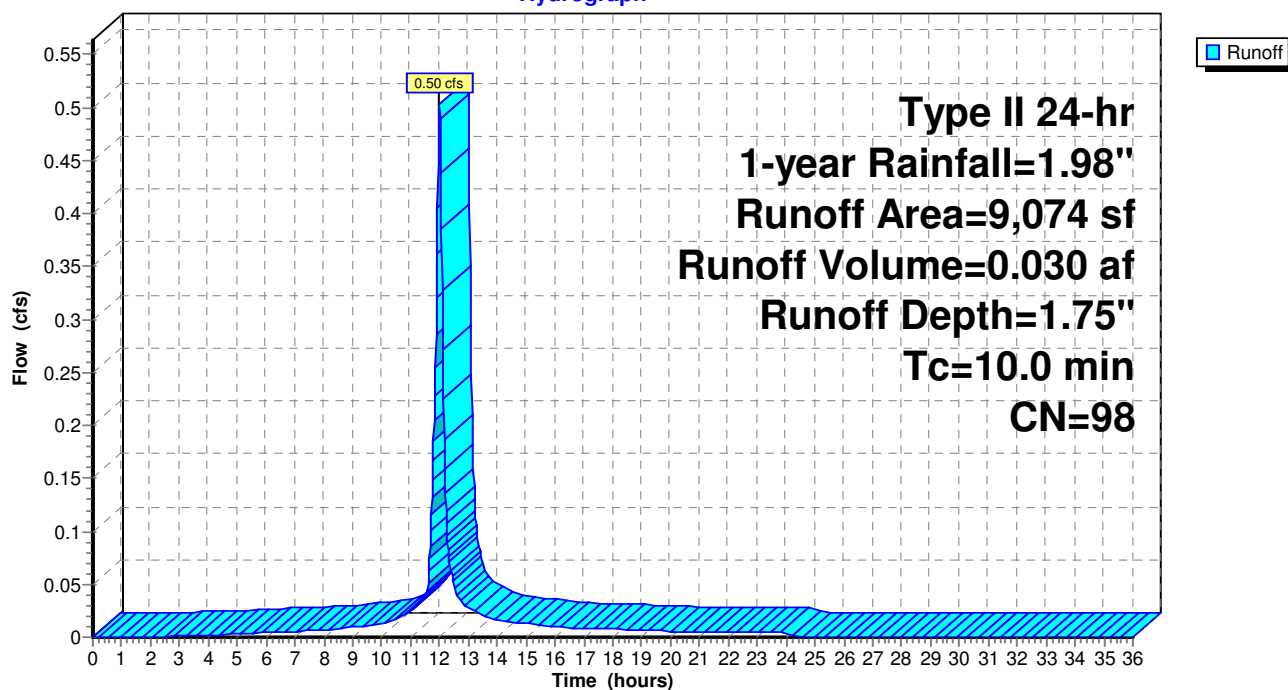
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 3

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.00 cfs @ 18.10 hrs, Volume= 0.000 af, Depth= 0.02"

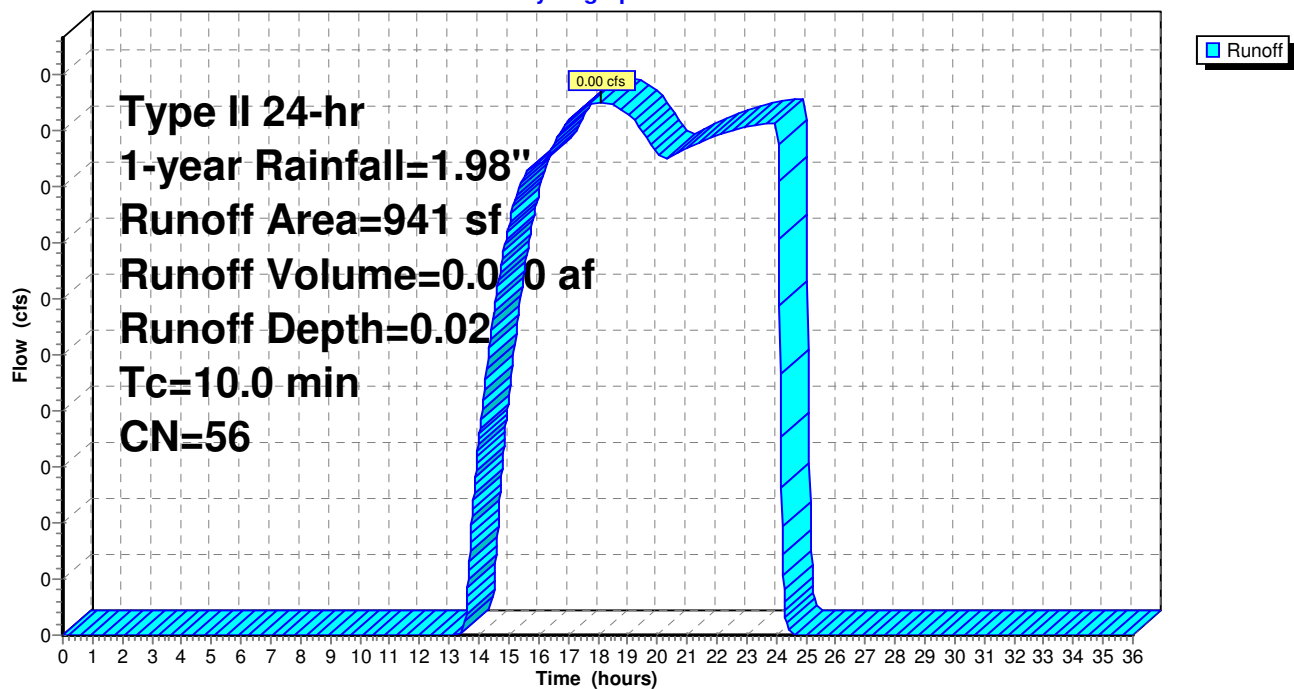
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 4

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 2.39 cfs @ 12.02 hrs, Volume= 0.129 af, Depth= 0.95"

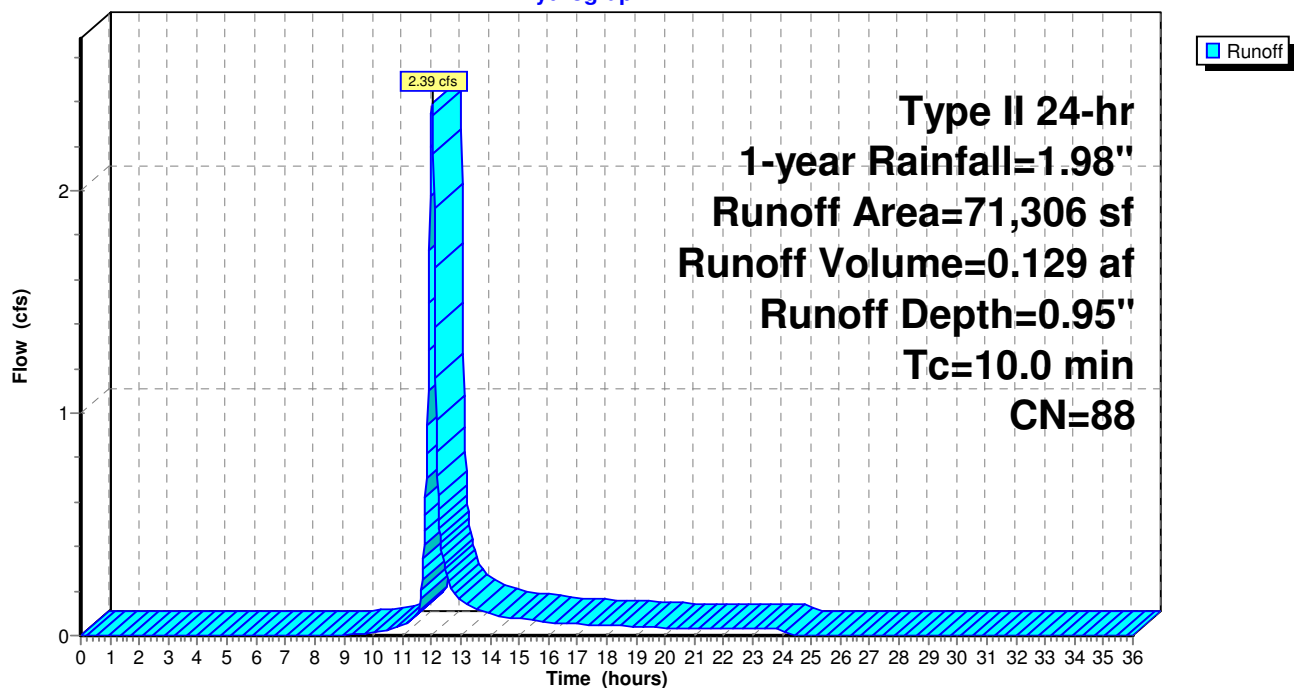
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

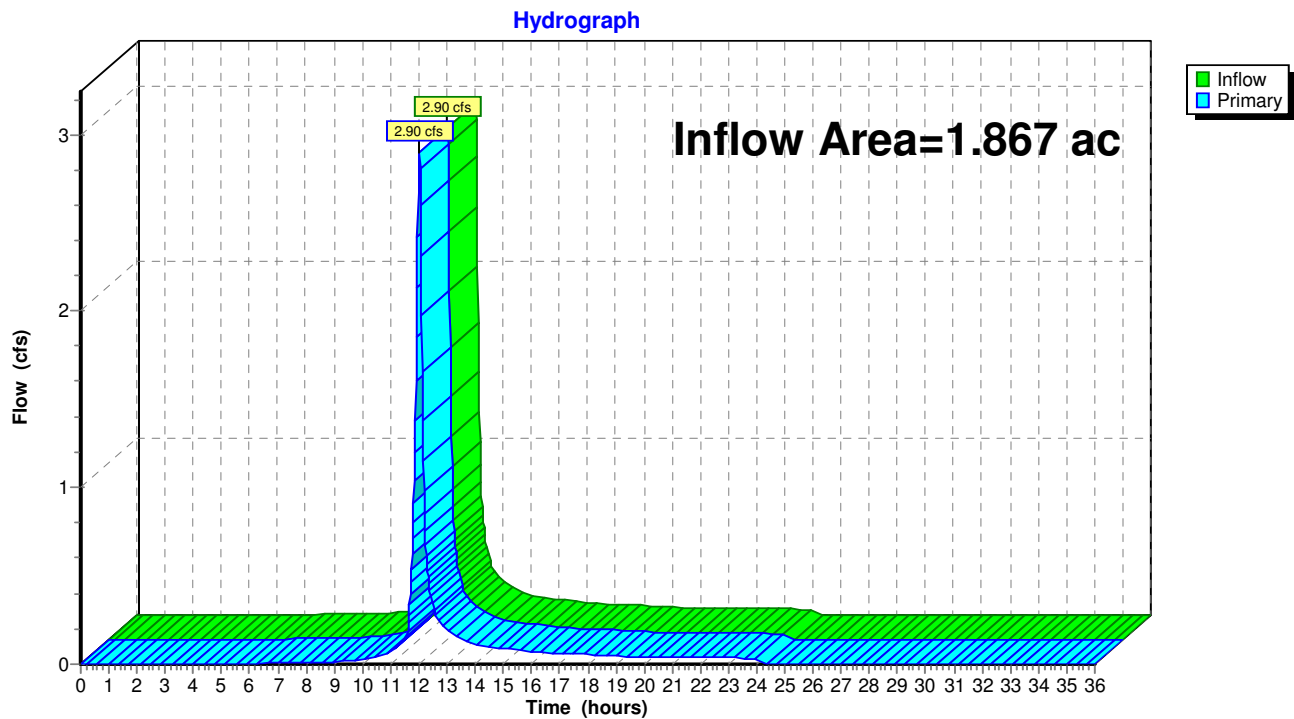
Hydrograph



Summary for Link 2L: Collective Proposed Runoff

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 1.03" for 1-year event
Inflow = 2.90 cfs @ 12.02 hrs, Volume= 0.160 af
Primary = 2.90 cfs @ 12.02 hrs, Volume= 0.160 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 2L: Collective Proposed Runoff

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 6

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.63 cfs @ 12.01 hrs, Volume= 0.038 af, Depth= 2.21"

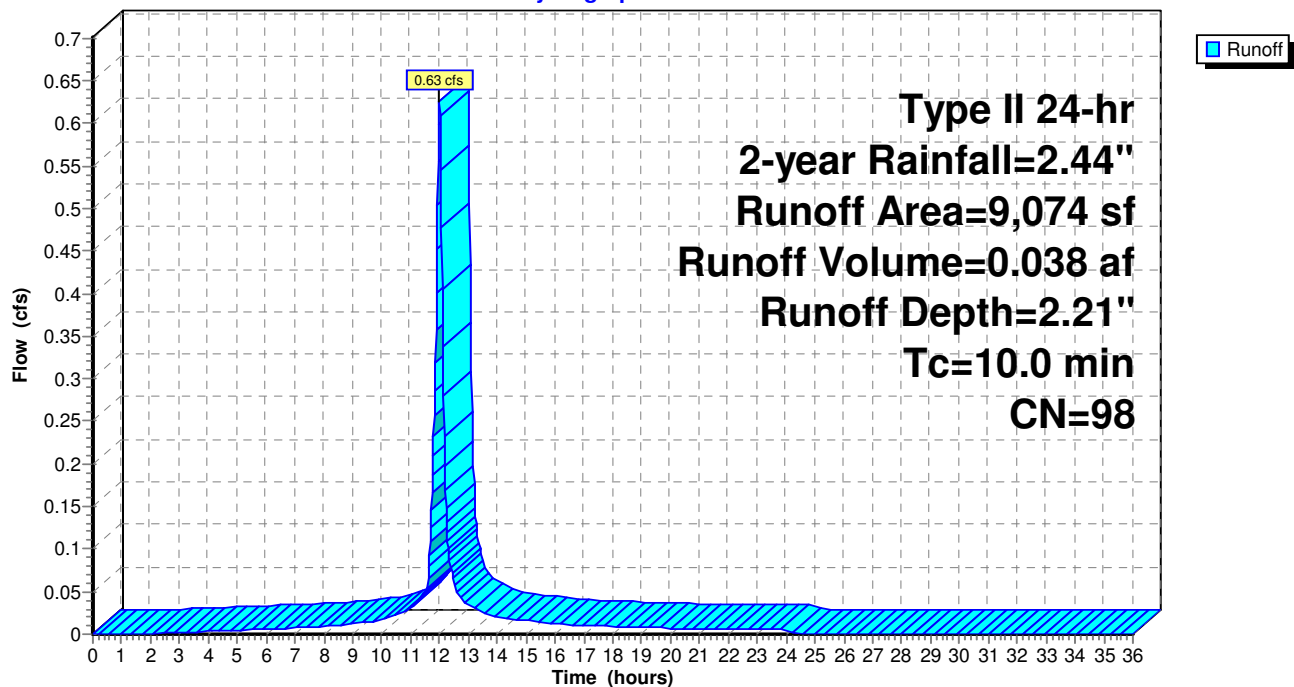
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 7

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.00 cfs @ 12.47 hrs, Volume= 0.000 af, Depth= 0.09"

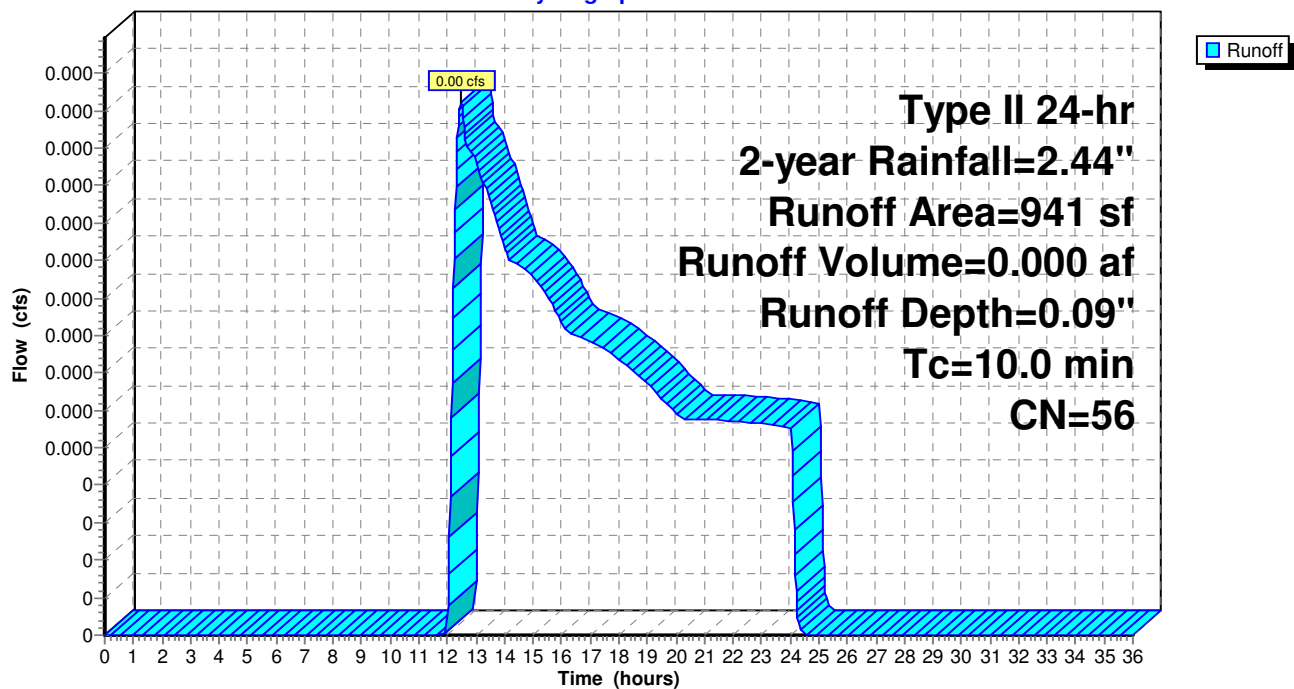
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company
HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 8

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 3.34 cfs @ 12.02 hrs, Volume= 0.181 af, Depth= 1.33"

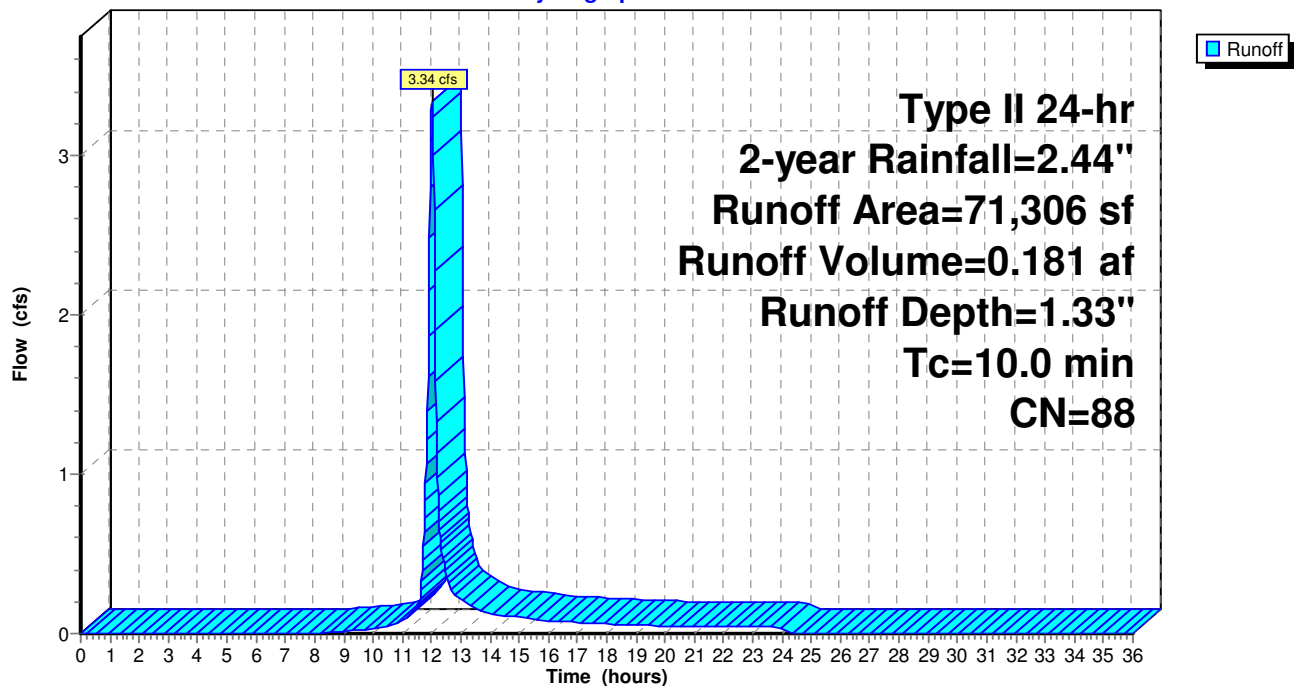
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

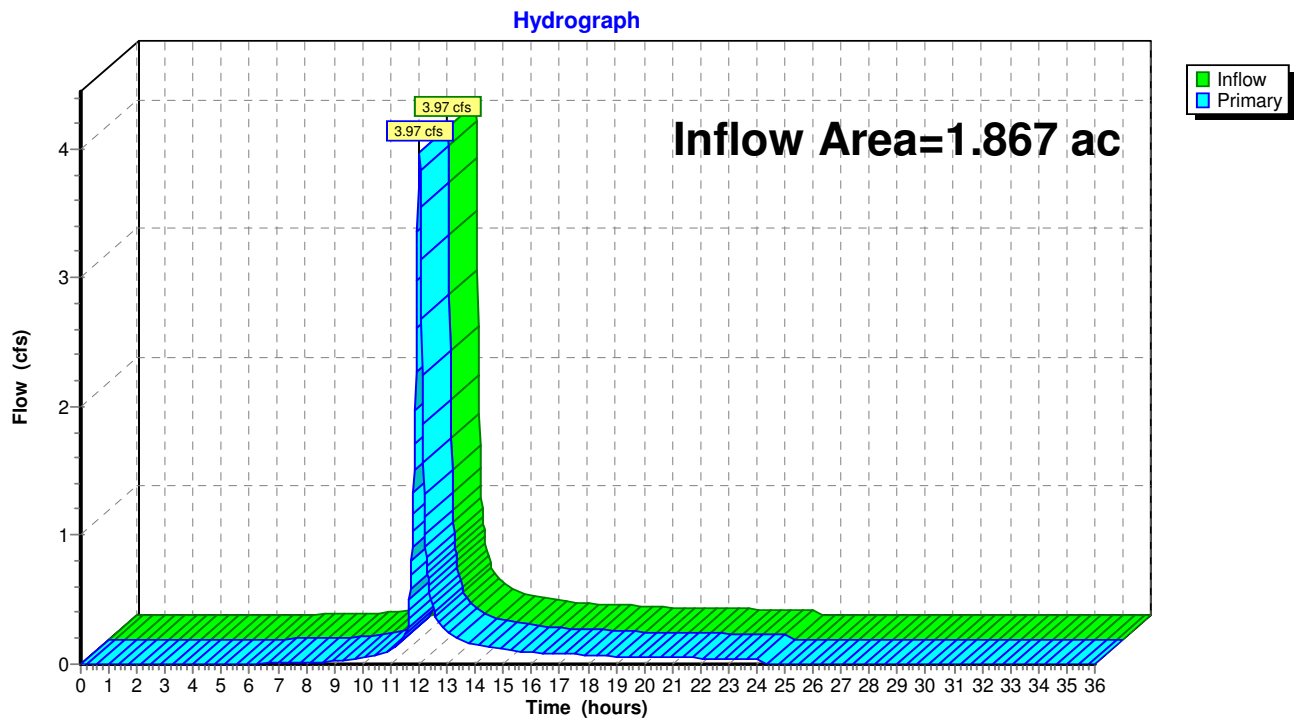
Page 9

Summary for Link 2L: Collective Proposed Runoff

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 1.41" for 2-year event
Inflow = 3.97 cfs @ 12.02 hrs, Volume= 0.220 af
Primary = 3.97 cfs @ 12.02 hrs, Volume= 0.220 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 2L: Collective Proposed Runoff



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 10

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.79 cfs @ 12.01 hrs, Volume= 0.049 af, Depth= 2.83"

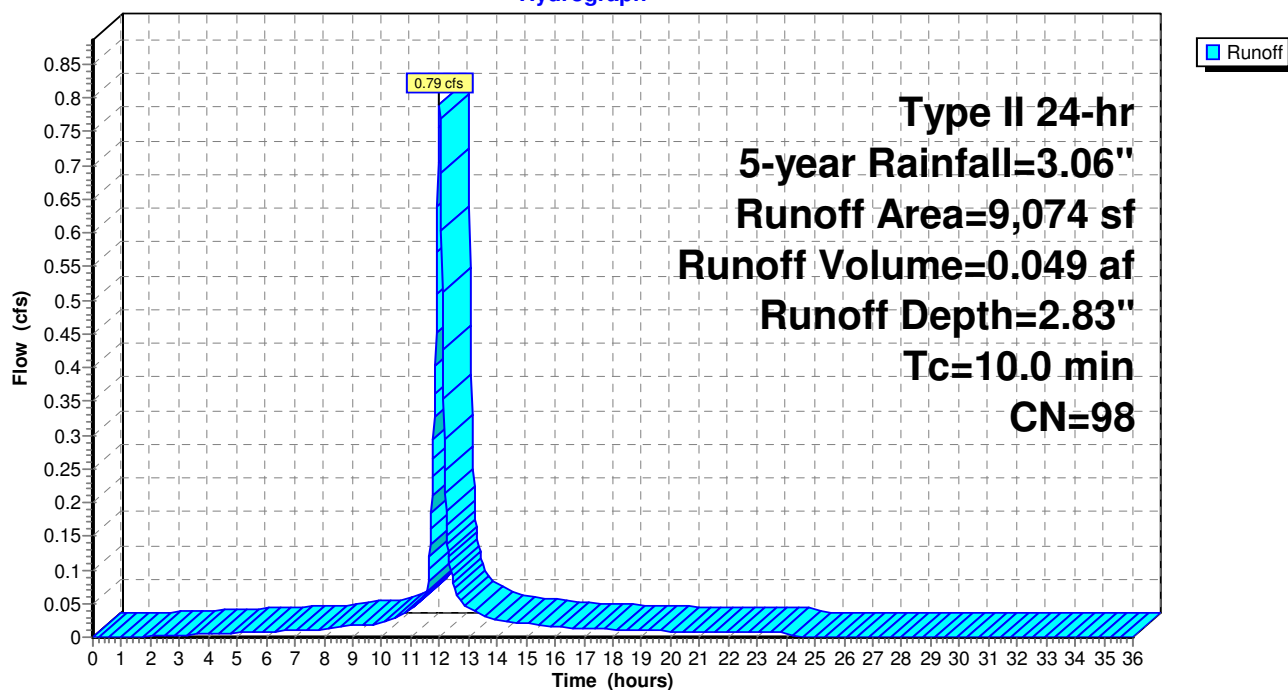
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 5-year Rainfall=3.06"

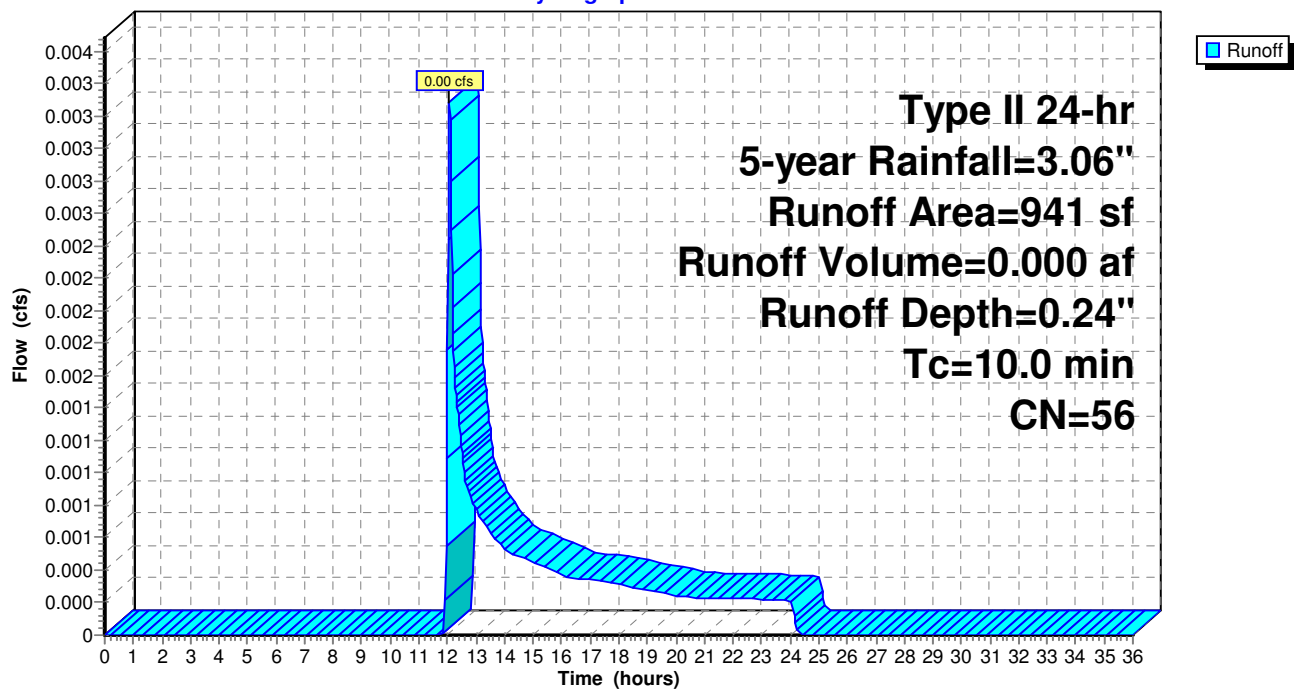
	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph





Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 12

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 4.66 cfs @ 12.02 hrs, Volume= 0.255 af, Depth= 1.87"

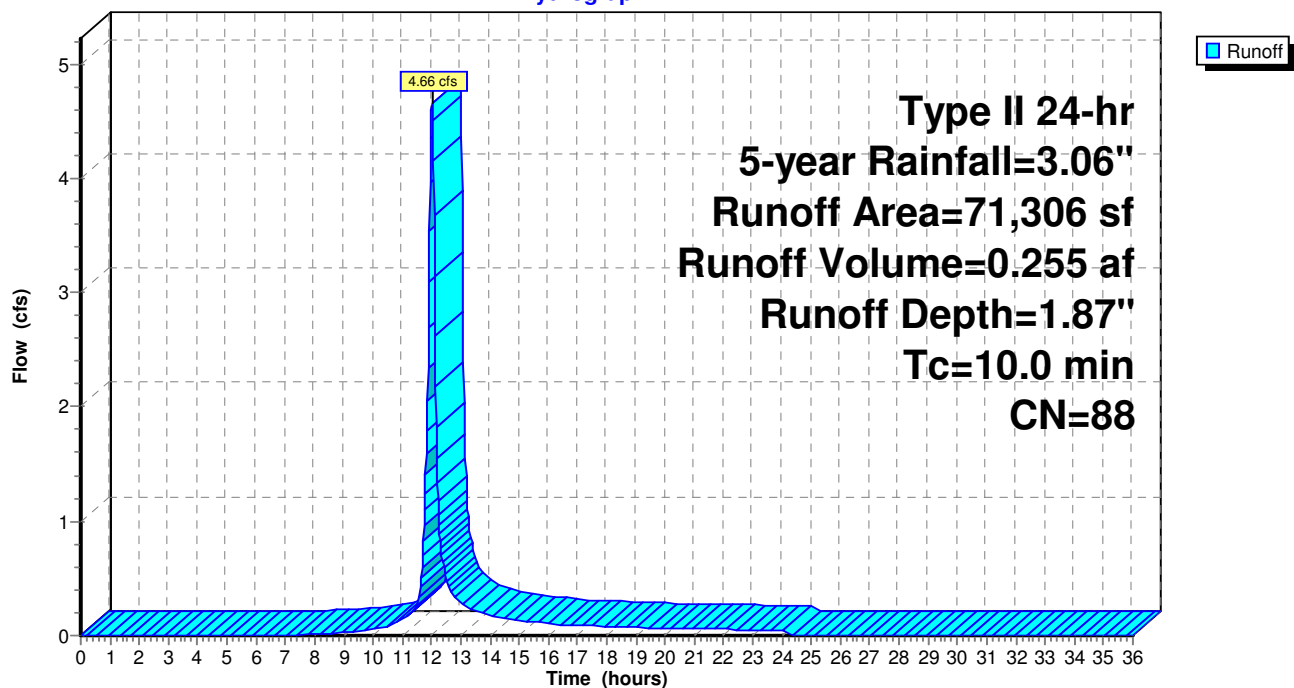
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 5-year Rainfall=3.06"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

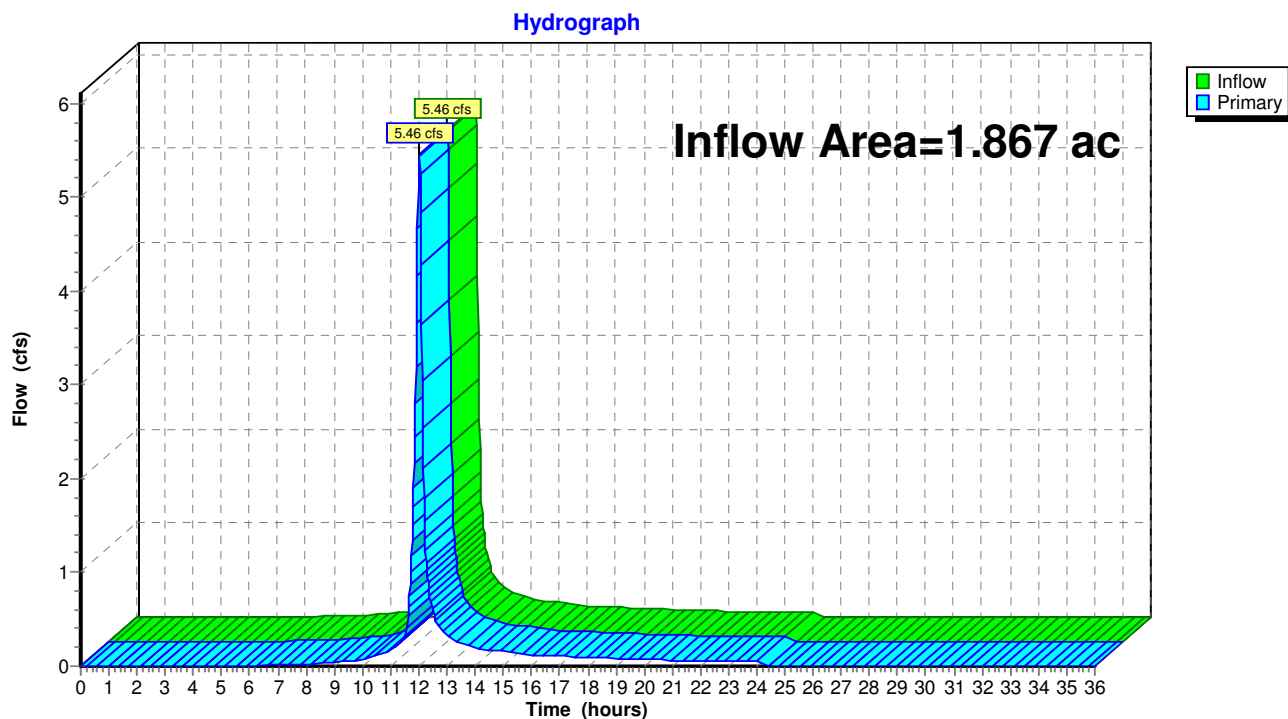
Hydrograph



Summary for Link 2L: Collective Proposed Runoff

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 1.96" for 5-year event
Inflow = 5.46 cfs @ 12.01 hrs, Volume= 0.305 af
Primary = 5.46 cfs @ 12.01 hrs, Volume= 0.305 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 2L: Collective Proposed Runoff

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 14

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.92 cfs @ 12.01 hrs, Volume= 0.058 af, Depth= 3.32"

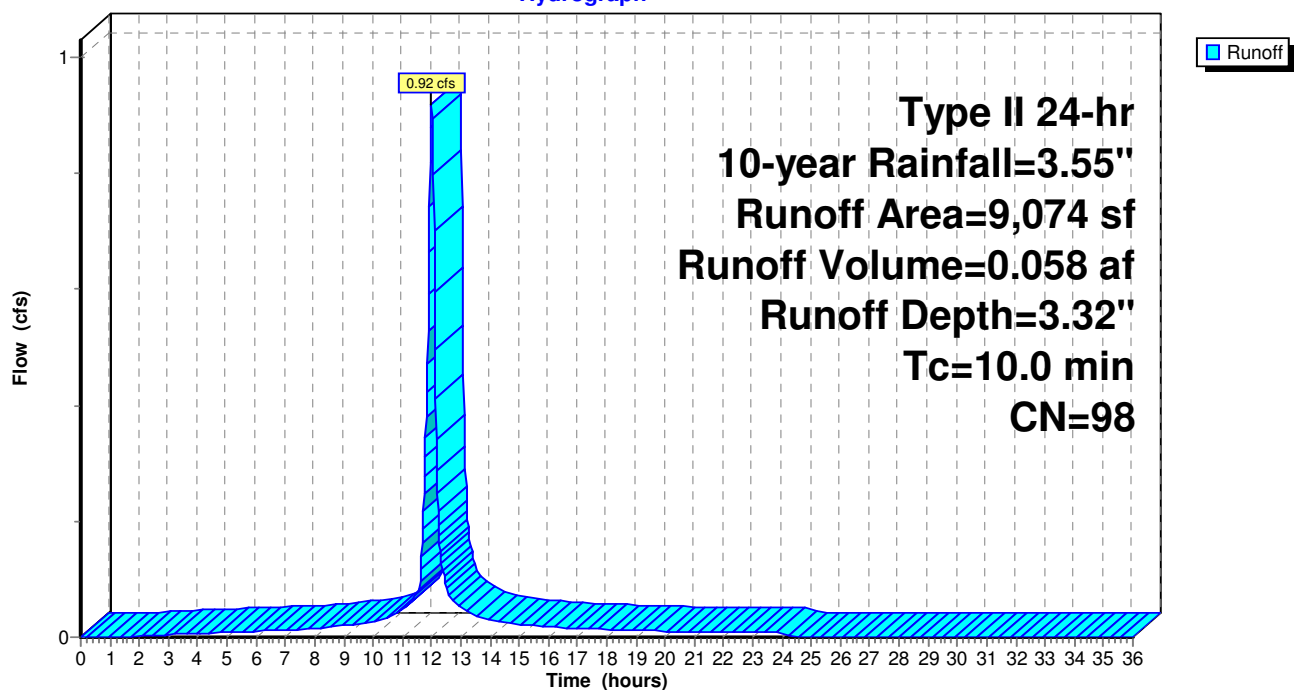
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 15

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.01 cfs @ 12.05 hrs, Volume= 0.001 af, Depth= 0.40"

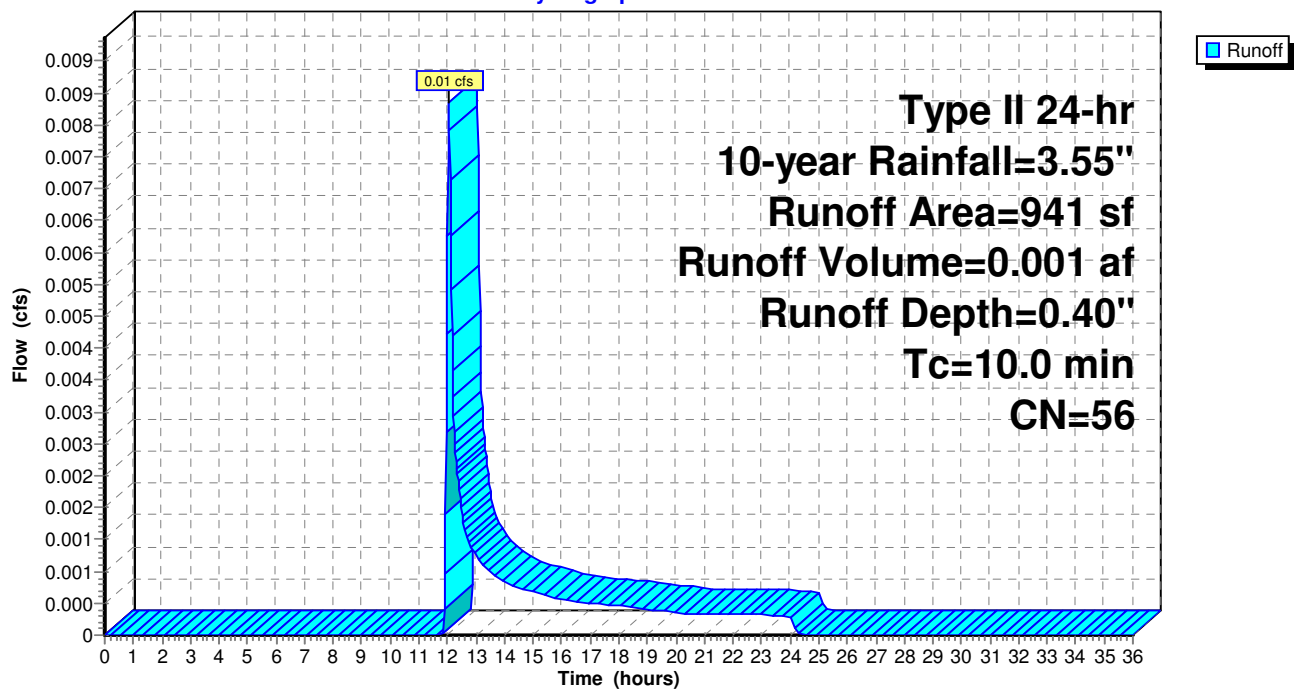
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 16

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 5.72 cfs @ 12.01 hrs, Volume= 0.316 af, Depth= 2.31"

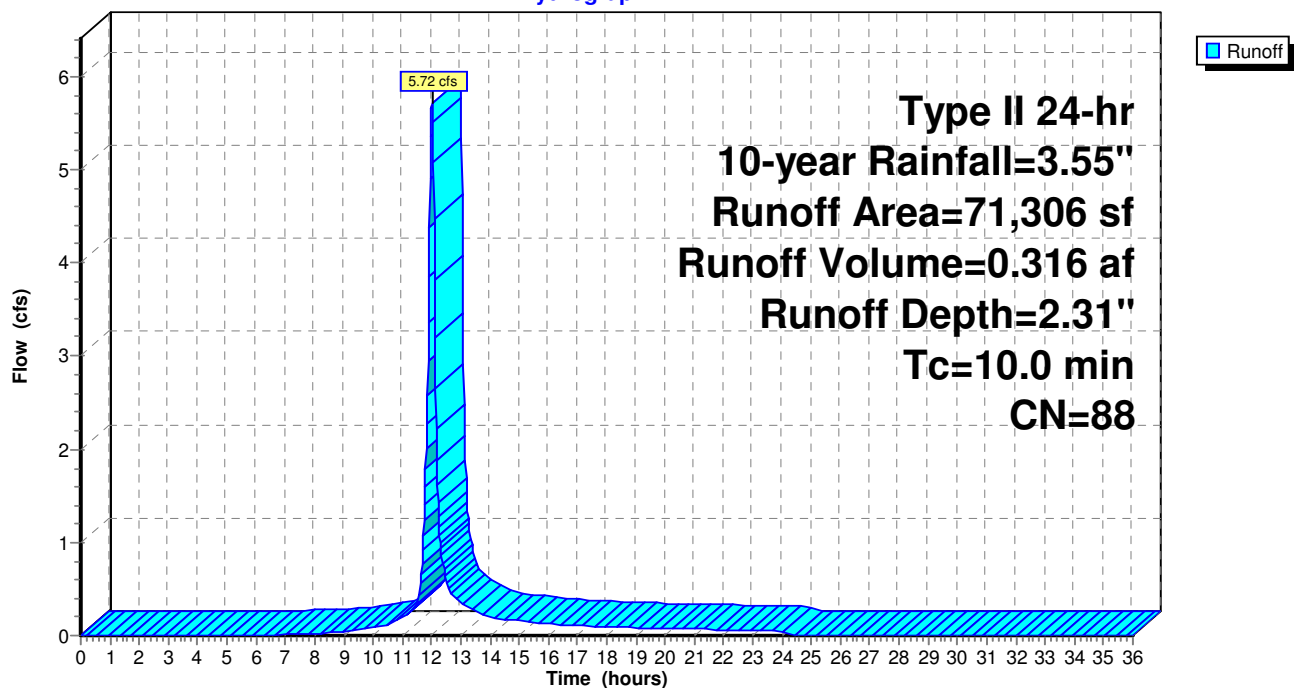
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

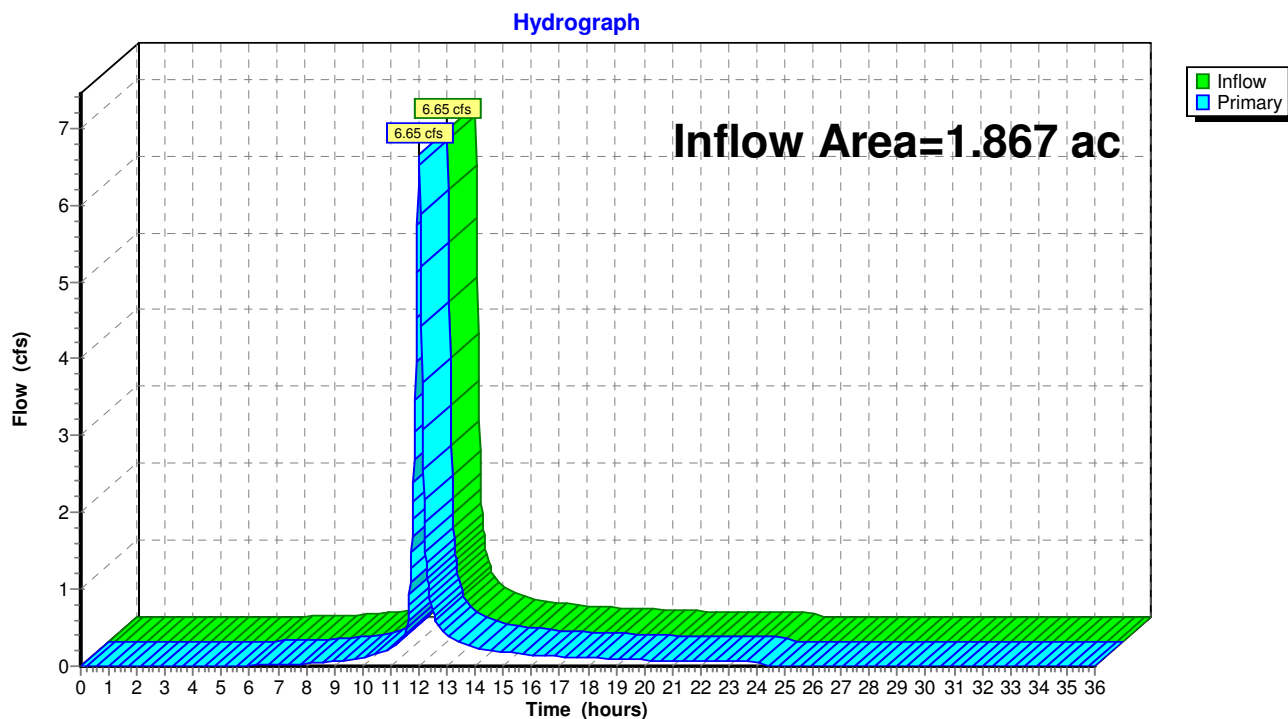
Hydrograph



Summary for Link 2L: Collective Proposed Runoff

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 2.40" for 10-year event
Inflow = 6.65 cfs @ 12.01 hrs, Volume= 0.374 af
Primary = 6.65 cfs @ 12.01 hrs, Volume= 0.374 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 2L: Collective Proposed Runoff

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 18

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.13 cfs @ 12.01 hrs, Volume= 0.071 af, Depth= 4.11"

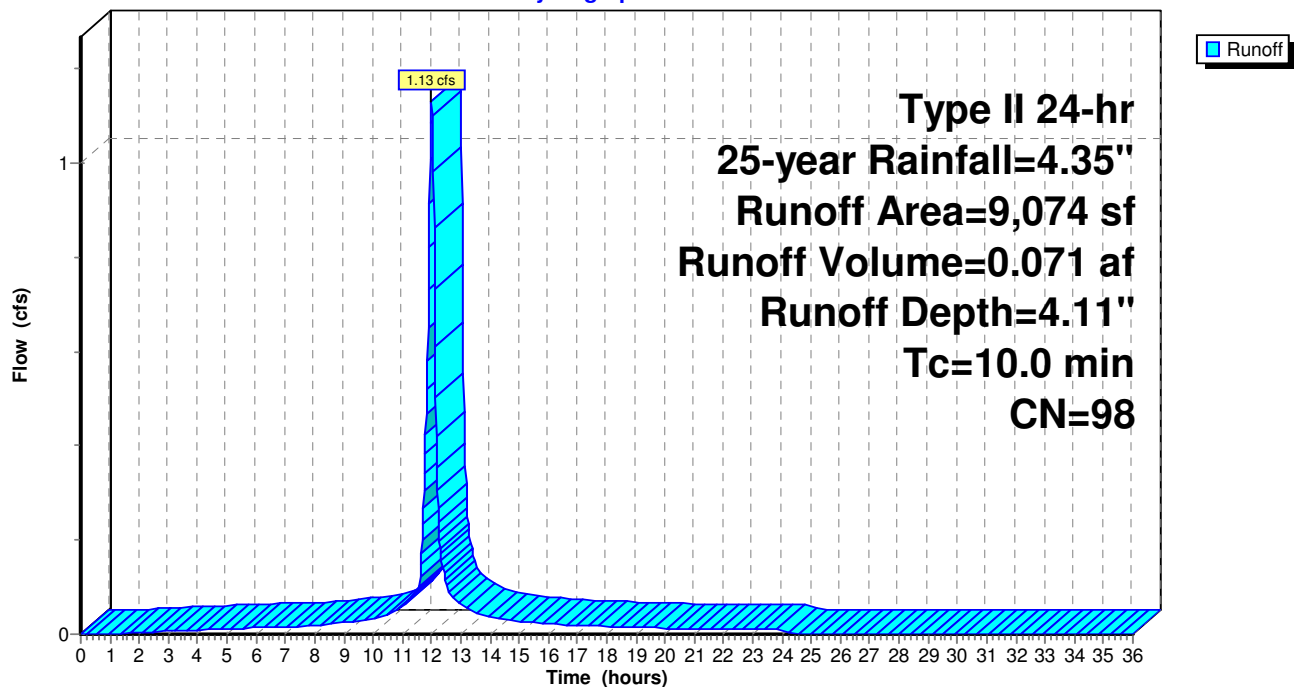
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 19

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.02 cfs @ 12.04 hrs, Volume= 0.001 af, Depth= 0.73"

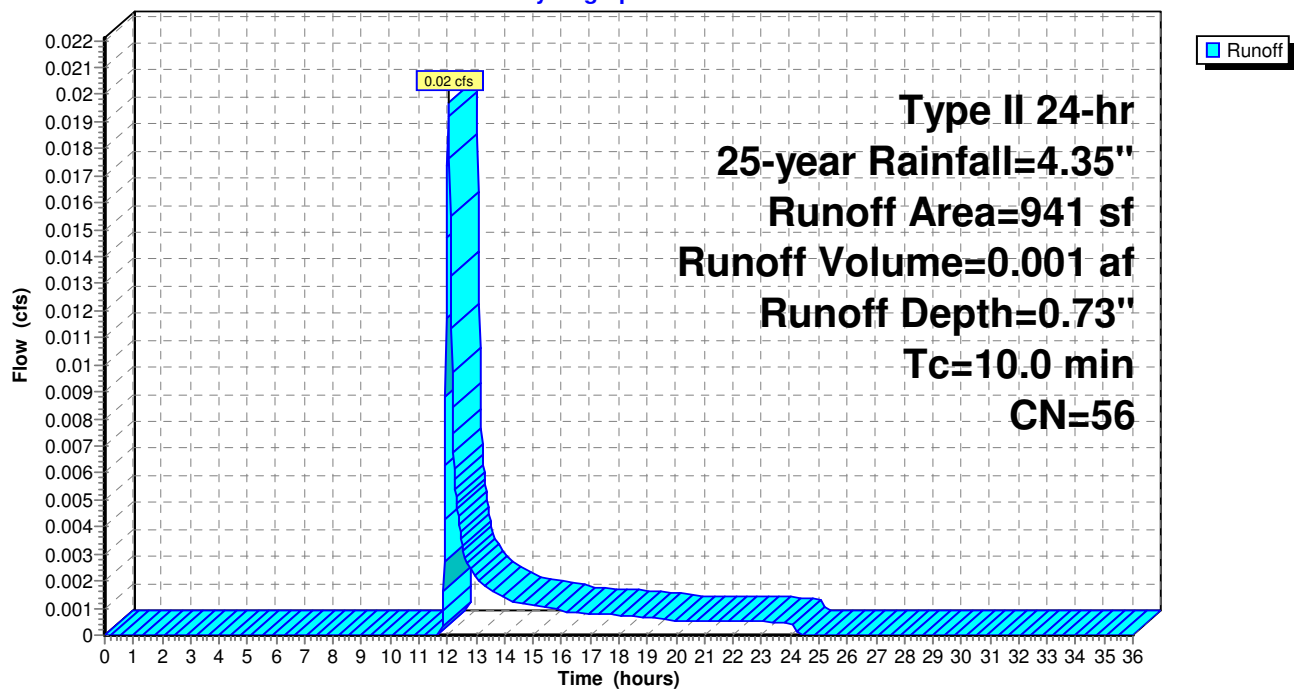
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 20

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 7.46 cfs @ 12.01 hrs, Volume= 0.417 af, Depth= 3.06"

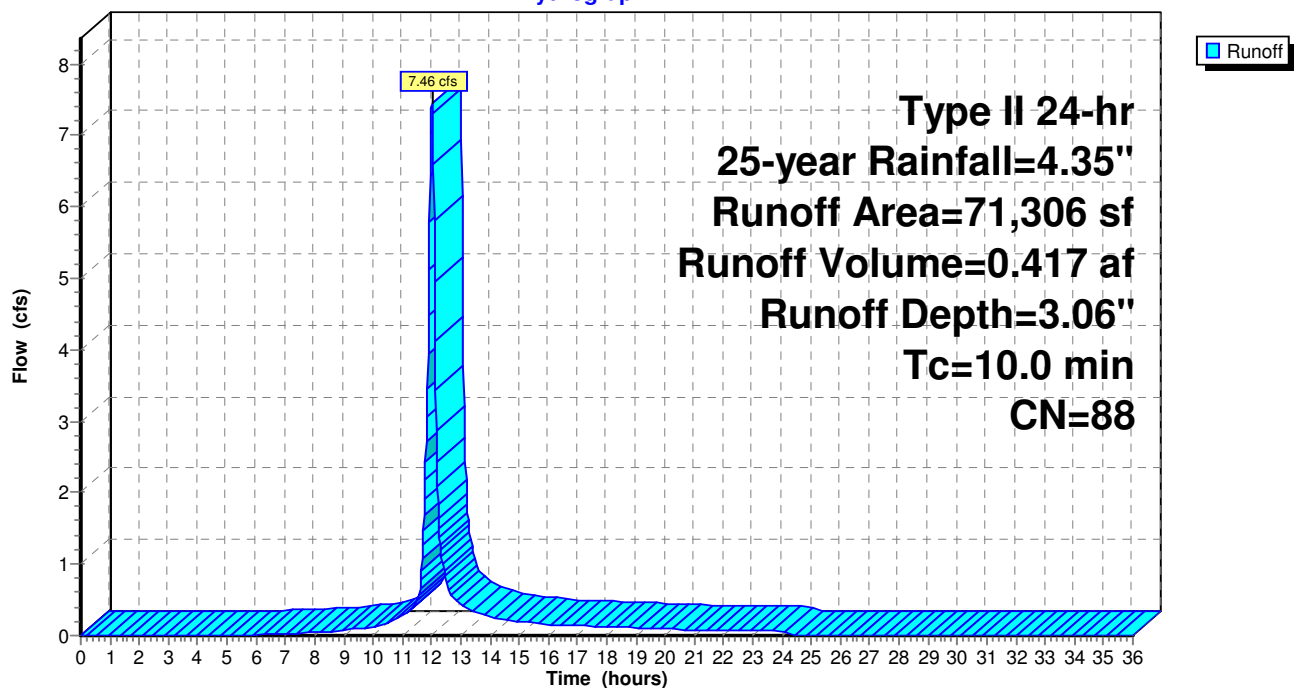
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 21

Summary for Link 2L: Collective Proposed Runoff

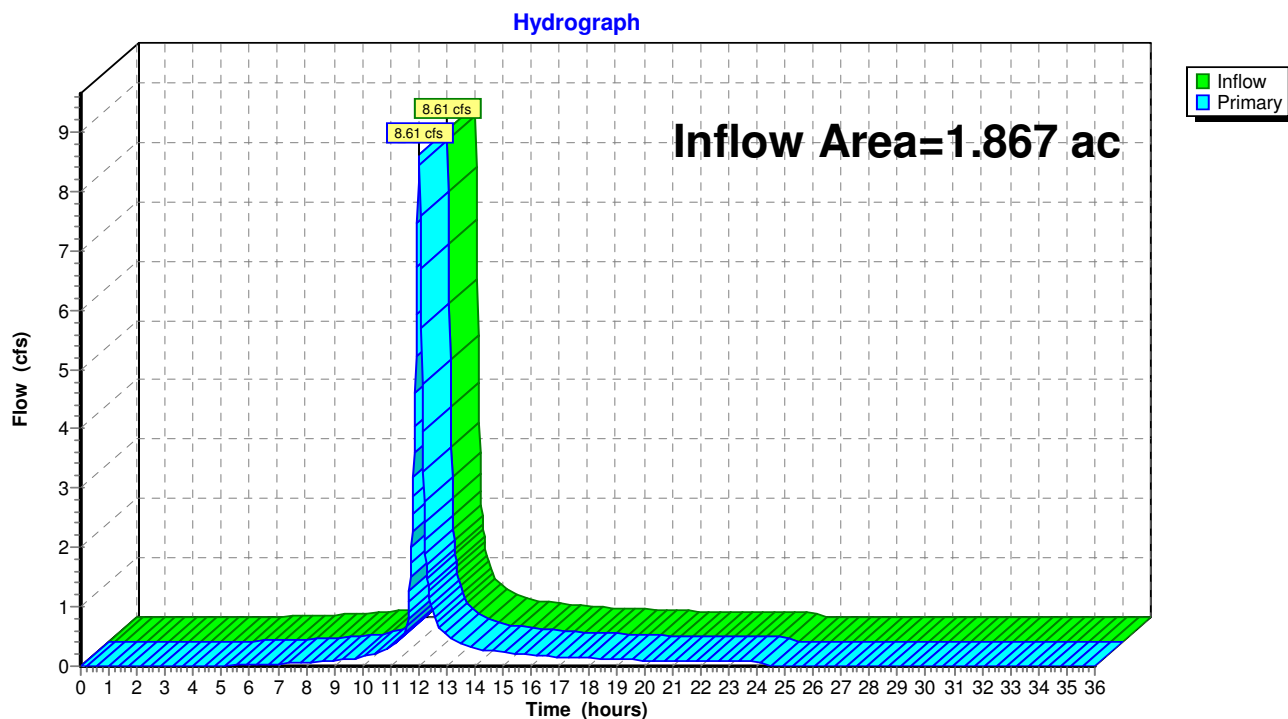
Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 3.15" for 25-year event

Inflow = 8.61 cfs @ 12.01 hrs, Volume= 0.490 af

Primary = 8.61 cfs @ 12.01 hrs, Volume= 0.490 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 2L: Collective Proposed Runoff



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 22

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.32 cfs @ 12.01 hrs, Volume= 0.084 af, Depth= 4.84"

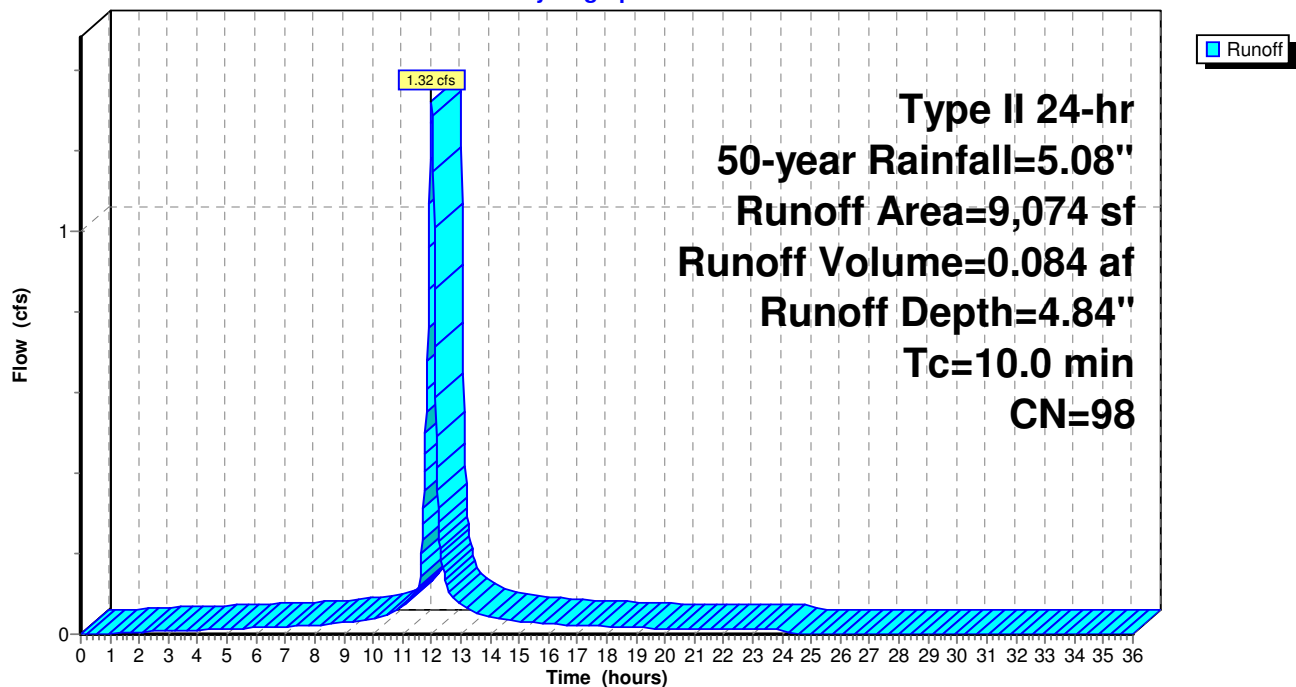
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 23

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.03 cfs @ 12.03 hrs, Volume= 0.002 af, Depth= 1.08"

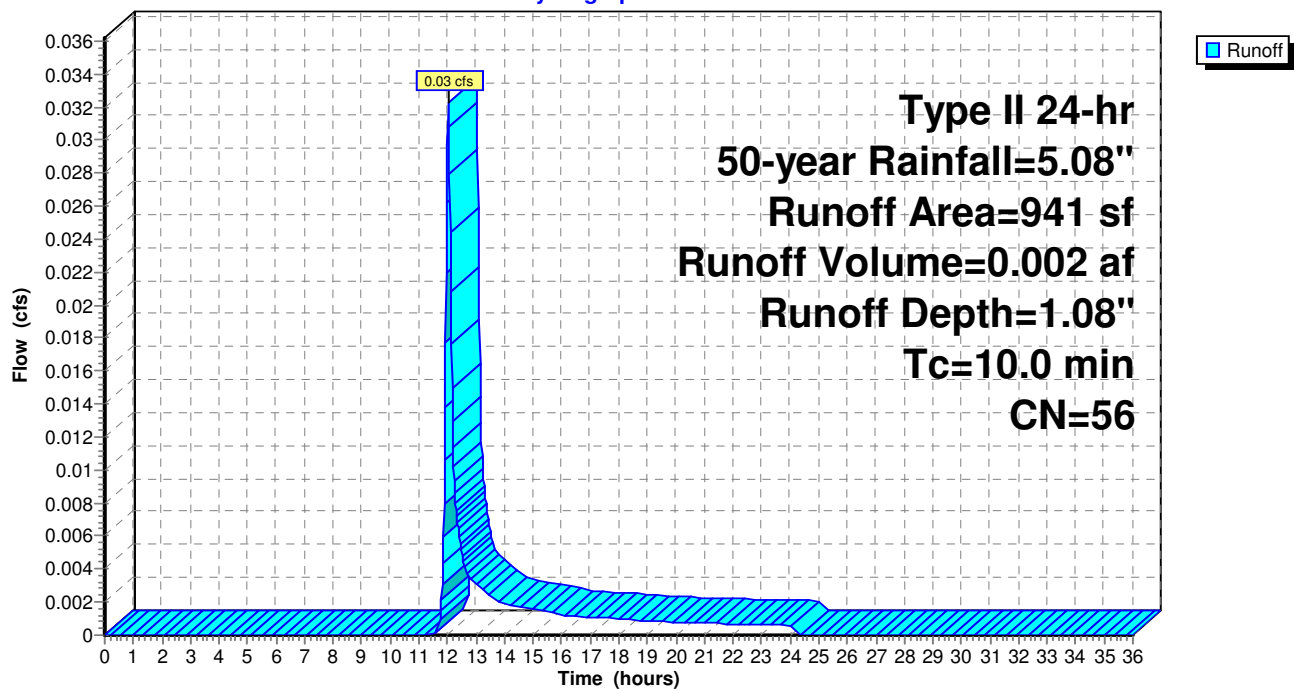
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 24

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 9.05 cfs @ 12.01 hrs, Volume= 0.511 af, Depth= 3.74"

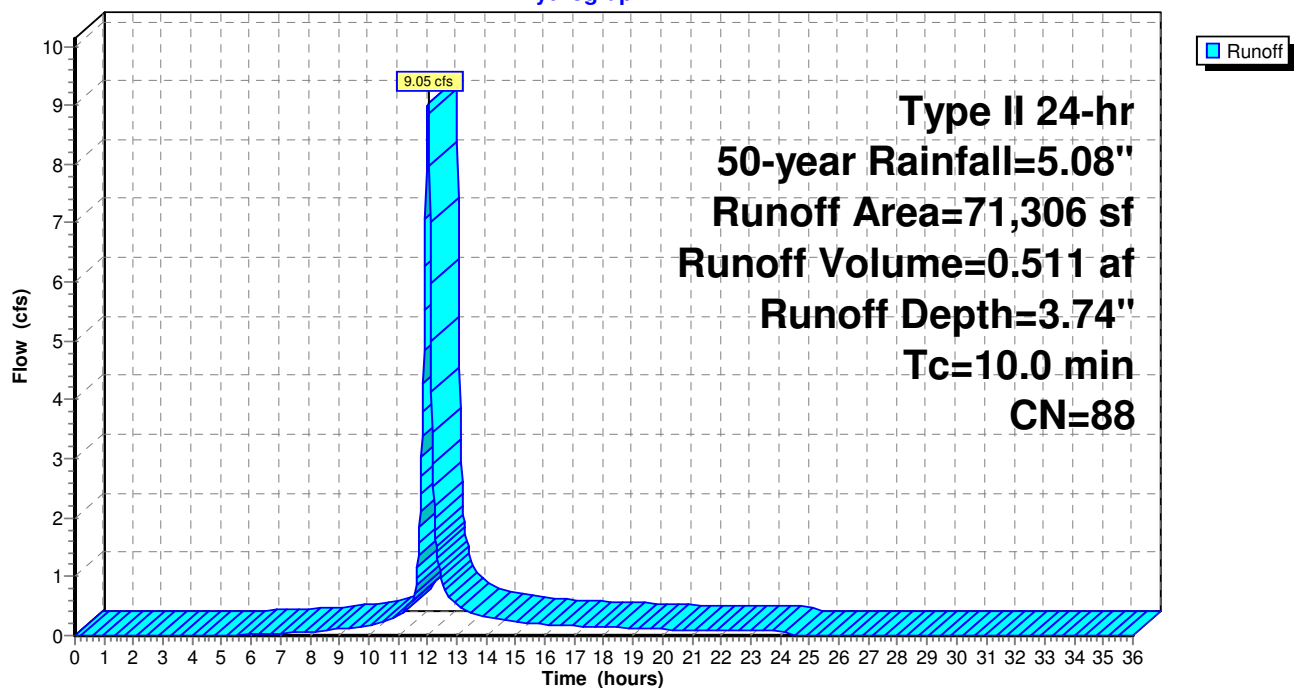
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

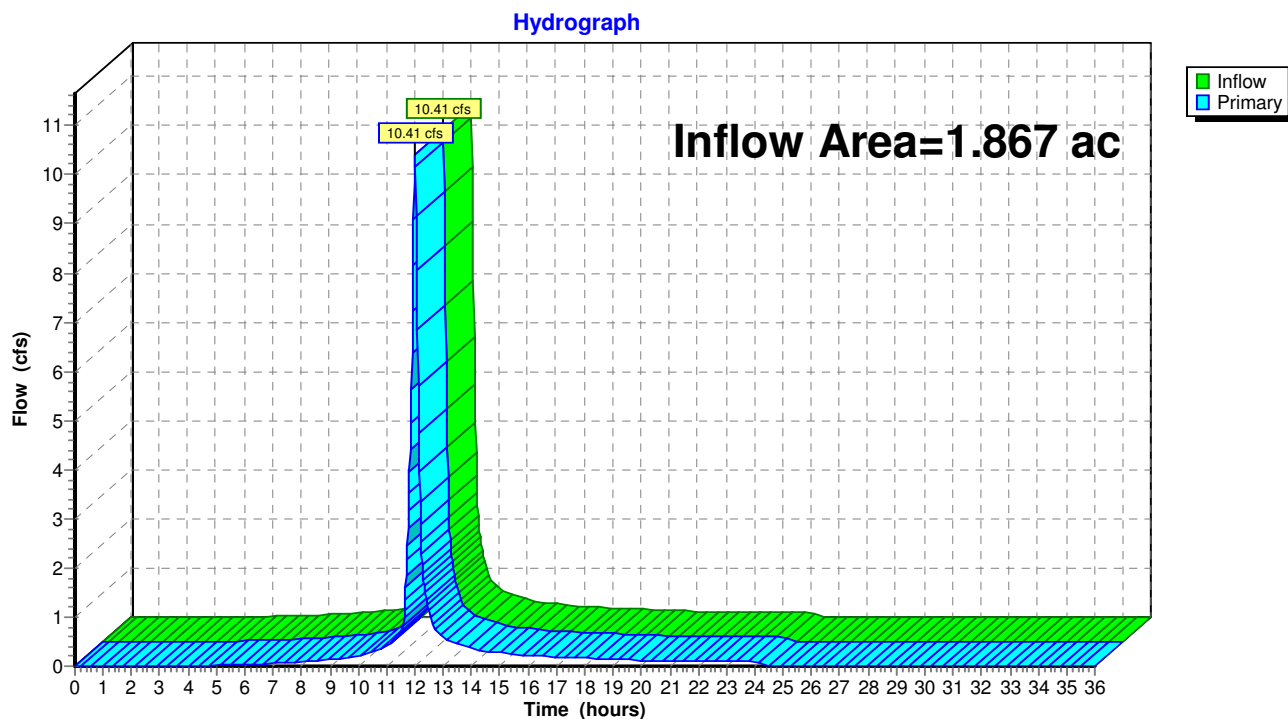
Hydrograph



Summary for Link 2L: Collective Proposed Runoff

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 3.84" for 50-year event
Inflow = 10.41 cfs @ 12.01 hrs, Volume= 0.597 af
Primary = 10.41 cfs @ 12.01 hrs, Volume= 0.597 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 2L: Collective Proposed Runoff

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 26

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.55 cfs @ 12.01 hrs, Volume= 0.099 af, Depth= 5.68"

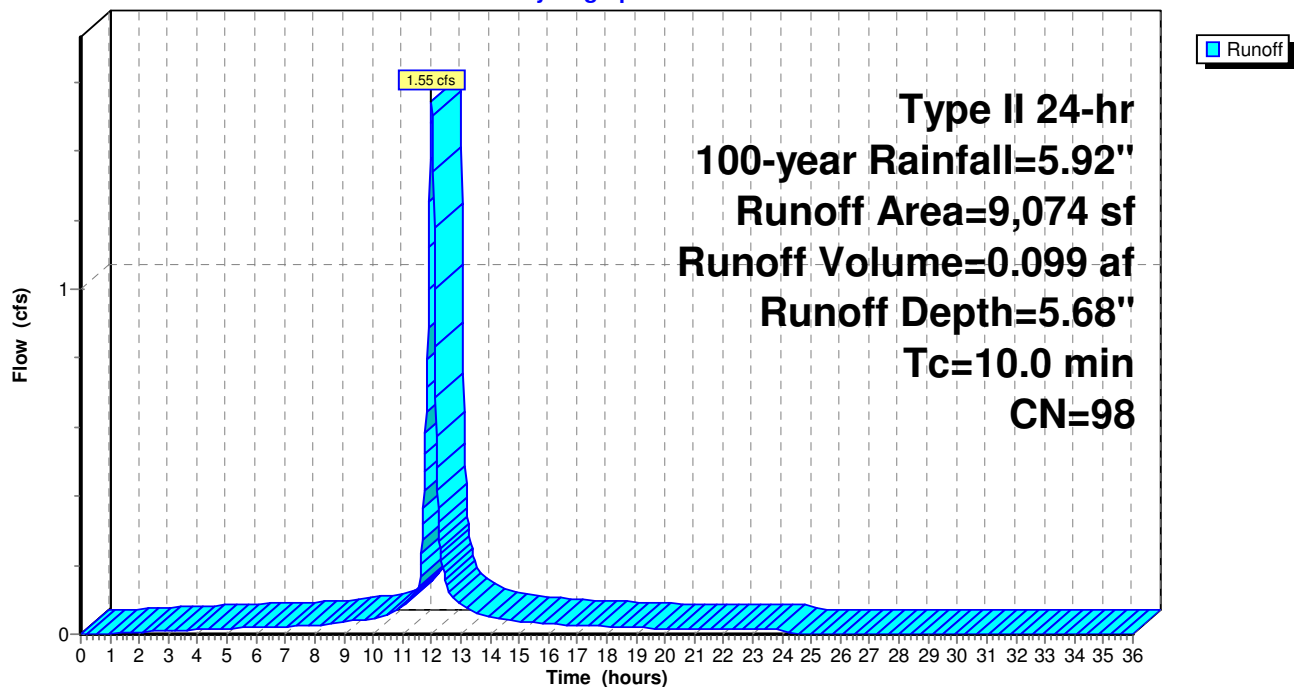
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 27

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.05 cfs @ 12.03 hrs, Volume= 0.003 af, Depth= 1.55"

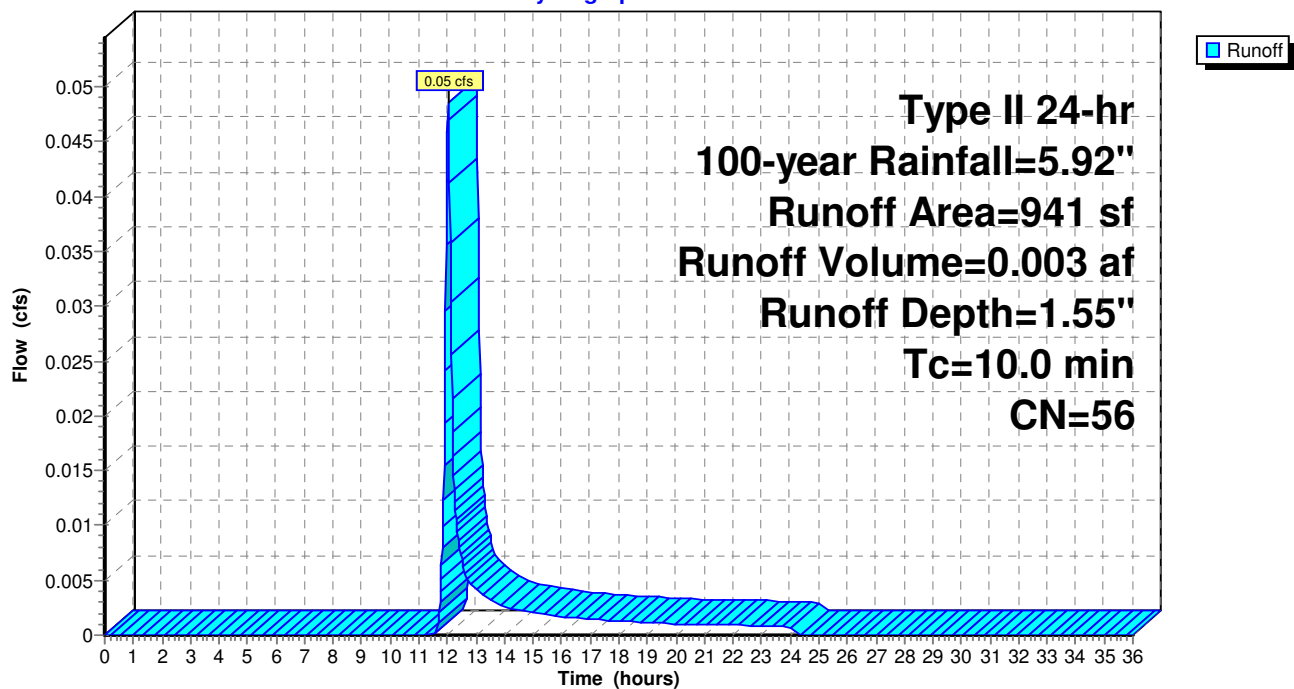
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 28

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 10.87 cfs @ 12.01 hrs, Volume= 0.621 af, Depth= 4.55"

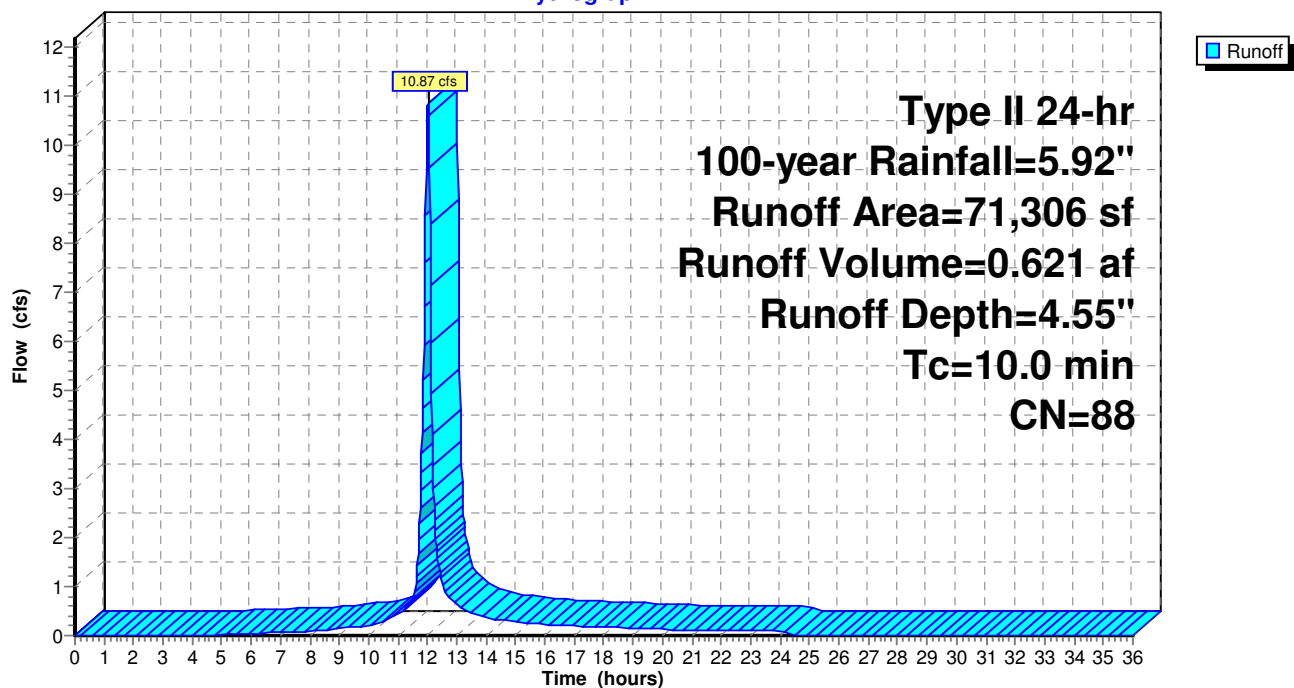
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



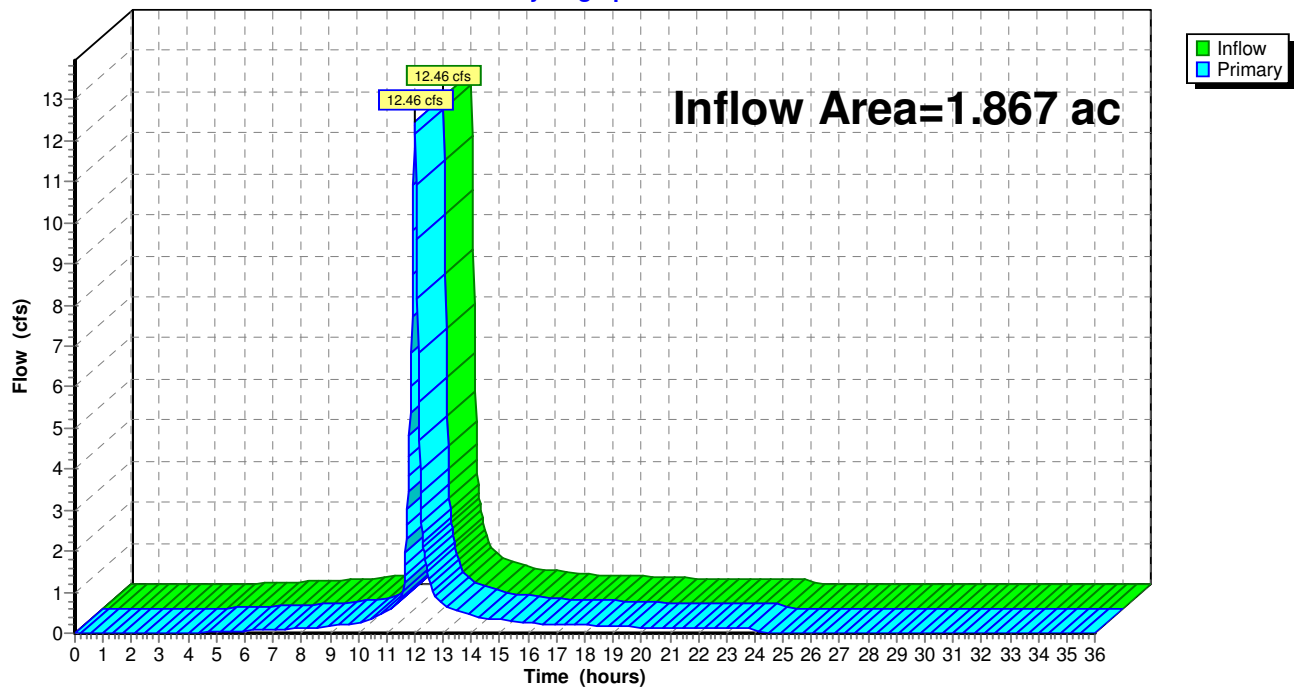
Summary for Link 2L: Collective Proposed Runoff

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 4.64" for 100-year event

Inflow = 12.46 cfs @ 12.01 hrs, Volume= 0.722 af

Primary = 12.46 cfs @ 12.01 hrs, Volume= 0.722 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Link 2L: Collective Proposed Runoff**Hydrograph**

Appendix D

Underground Detention Calculations

Water Quality Calculations

Underground Detention System Detail Sheet

Underground Detention System Hydrographs (D)

Ohio EPA Storm Water Quality Calculator

Project Name:	Culver's North Ridgeville
Project Date:	Monday, August 29, 2022
Designed By:	Beres

Required Input Information		
Area (A) =	1.87	Acres
Perc. (P) =	0.90	Inches
Runoff Coeff. (C) =	0.85	Unitless
Drawdown Time (T) =	24.00	Hours
WQ _v depth (H) =	0.65	Feet

<= From Area and "C"
Values Chart

Runoff Coefficient for Ex. Conditions
$Rv_1 = 0.05 + 0.9*i$
$i = 0.87$
$Rv_1 = 0.84$

Runoff Coefficient for Prop. Conditions
$Rv_2 = 0.05 + 0.9*i$
$i = 0.67$
$Rv_2 = 0.65$

Water Quality Volume (WQ _v)		
WQ _v =	$[P*A*(Rv_1*0.2)+(Rv_2-Rv_1)]/12$	
WQ _v =	-0.0027	Ac.-Ft.
WQ _v =	-116	Cu.-Ft.

minimum target volume below bypass
<= connection to outlet structure

Sediment Storage Volume, SSV		
SSV =	20% WQ _v	
SSV =	-23	Cu.-Ft.

Min. Volume to Capture within Isolator Row		
Total =	WQ _v + SSV	
Total =	-140	Cu.-Ft.

Water Quality Flow (WQ _f) Isolator Row		
WQ _f =	$[C * i * A]$	
WQ _f =	2.35	cfs

Isolator Row:			
Flow Rate per Sq.-Ft.	1 gpm/sq-ft	=	0.0022 cfs/sq-ft
SC-740 Chamber Area	85"x51"	=	30.25 sq-ft
End Cap Area	12"x51"	=	4.3 sq-ft
Flow Rate per Chamber	0.07 cfs/chamber		
Chambers Provided	14.0		
Bypass Pipe invert	761.35		
Volume Captured in Isolator row (below bypass)	743	c.f.	

Ohio EPA Storm Water Quality Calculator

Project Name:	Culver's North Ridgeville
Project Date:	Monday, August 29, 2022
Designed By:	Beres

Input Information		
Area (A) =	1.87	Acres
Perc. (P) =	0.90	Inches
Coeff. (C) =	0.85	Unitless
Drawdown Time (T) =	24.00	Hours
WQ _v depth (H) =	0.65	Feet

Flow Rate, Q (cfs) =	(WQ _v)/T
Flow Rate, Q (cfs) =	0.009

Orifice Area (ft²) =	(Q)/[(0.60)*(2*32.2*depth)^0.5]
Orifice Area (ft ²) =	0.0022
Radius (ft) =	0.0266
Radius (in) =	0.3187
Diameter (in) =	0.637

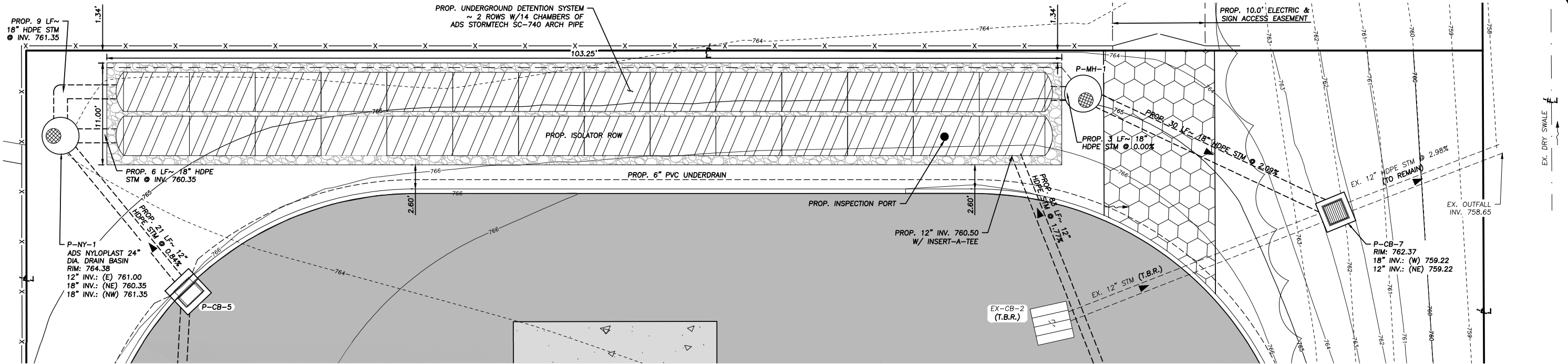
Discharge in 16 hr (ft³) =	(Q) * [(1/3)*Drawdown time]
Discharge Volume (ft ³) =	248
Max. Allowable in 16 hr (ft ³) =	(1/2)*WQ _v
Max. Allowable Volume (ft ³) =	N/A

Ohio EPA Storm Water Quality Calculator

Project Name:	Culver's North Ridgeville
Project Date:	Monday, August 29, 2022
Designed By:	Beres

Input Information		
Area (A) =	1.87	Acres
Perc. (P) =	0.90	Inches
Runoff Coeff. (Rv) =	0.85	Unitless
Drawdown Time (T) =	24.00	Hours
WQ _v depth (H) =	0.65	Feet

Summary of Calculations		
WQ _v (Required)	-116	Cu. Ft.
WQ _v (Provided)	743	Cu. Ft.
Orifice Diameter (Required)	0.637	Inches
Orifice Diameter (Provided)	0.50	Inches
Draw Down Time (Required)	24.00	Hours
Flow Rate (Calculated)	0.005	cfs
Draw Down Time (Provided)	38.99	Hours



Ohio EPA Storm Water Quality Calculator

Project Name:	Culver's North Ridgeville
Project Date:	Monday, August 29, 2022
Designed By:	Beres

Required Input Information		
Area (A) =	1.87	Acres
Perc. (P) =	0.90	Inches
Runoff Coeff. (C) =	0.85	Unitless
Drawdown Time (T) =	24.00	Hours
WQ _v depth (H) =	0.65	Feet

<= From Area and "C" Values Chart

Water Quality Volume (WQ _v)		
WQ _v =	[P * A * (Rv ₁ * 0.2) + (Rv ₂ - Rv ₁) * 12] / 12	
WQ _v =	-0.0027	Ac.-Ft.
WQ _v =	-116	Cu.-Ft.

minimum target volume below bypass
<= connection to outlet structure

Sediment Storage Volume, SSV		
SSV =	20% WQ _v	
SSV =	-23	Cu.-Ft.

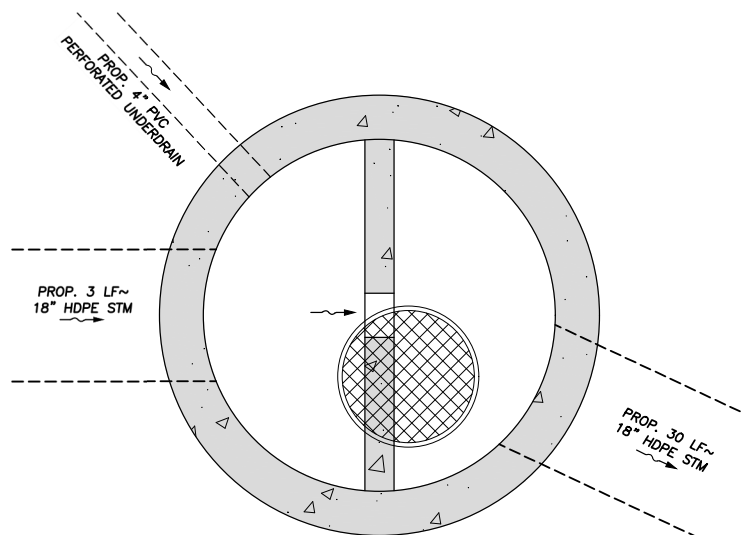
Min. Volume to Capture within Isolator Row		
Total =	WQ _v + SSV	
Total =	-140	Cu.-Ft.

Water Quality Flow (WQ _f) Isolator Row		
WQ _f =	[C * i * A]	
WQ _f =	2.35	cfs

Isolator Row:			
Flow Rate per Sq.-Ft.	1 gpm/sq-ft	=	0.0022 cfs/sq-ft
SC-740 Chamber Area	85"x51"	=	30.25 sq-ft
End Cap Area	12"x51"	=	4.3 sq-ft
Flow Rate per Chamber	0.07 cfs/chamber		
Chambers Provided	14.0		
Bypass Pipe Invert	761.35		
Volume Captured in Isolator row (below bypass)	743	c.f.	

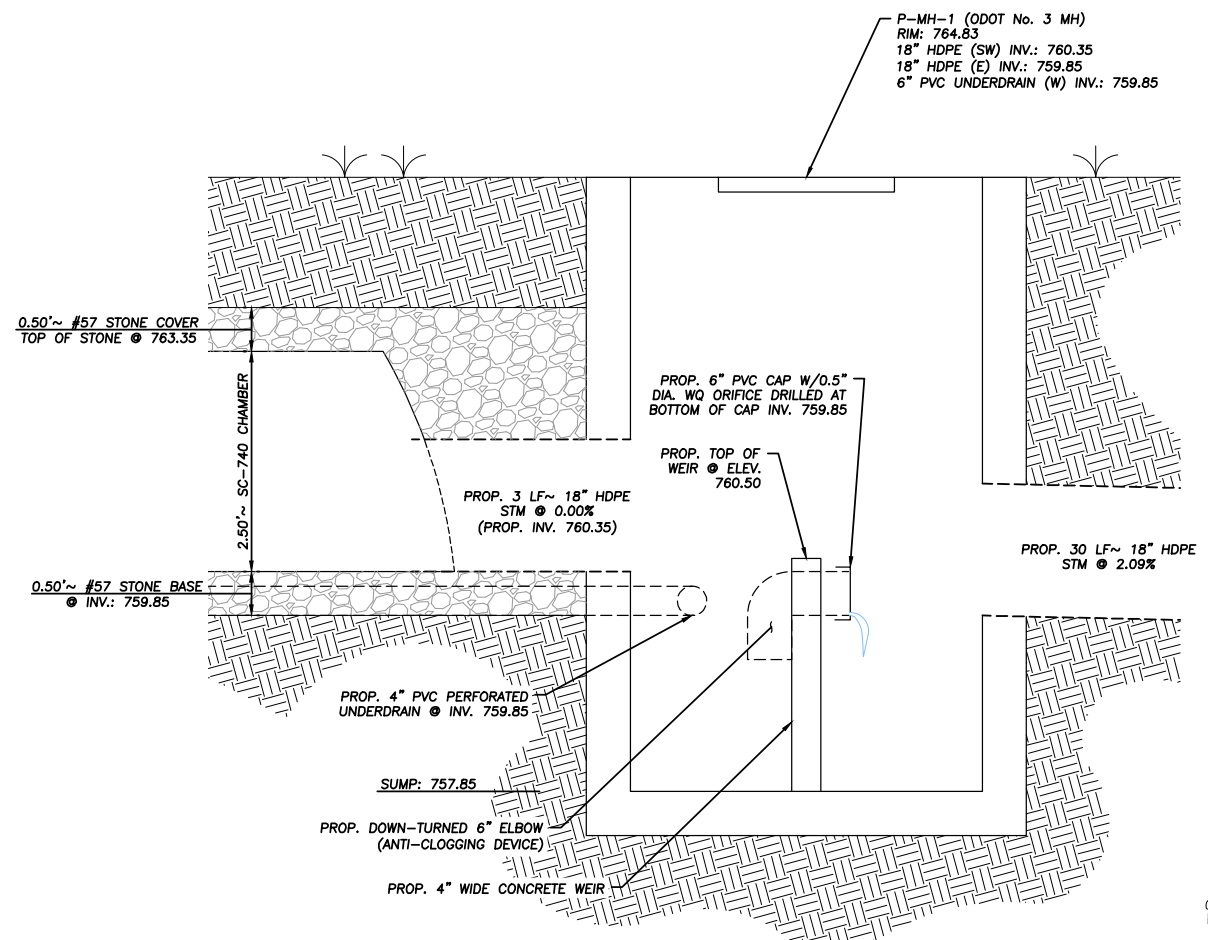
Runoff Coefficient for Ex. Conditions		
Rv ₁ =	0.05 + 0.9"i	
i =	0.87	
Rv ₁ =	0.84	

Runoff Coefficient for Prop. Conditions		
Rv ₂ =	0.05 + 0.9"i	
i =	0.67	
Rv ₂ =	0.65	



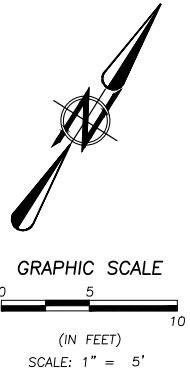
P-OUT-1 PLAN VIEW

- NOT TO SCALE -



P-OUT-1 PROFILE VIEW

- NOT TO SCALE -



DATE:	BY:	DESCRIPTION:

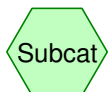
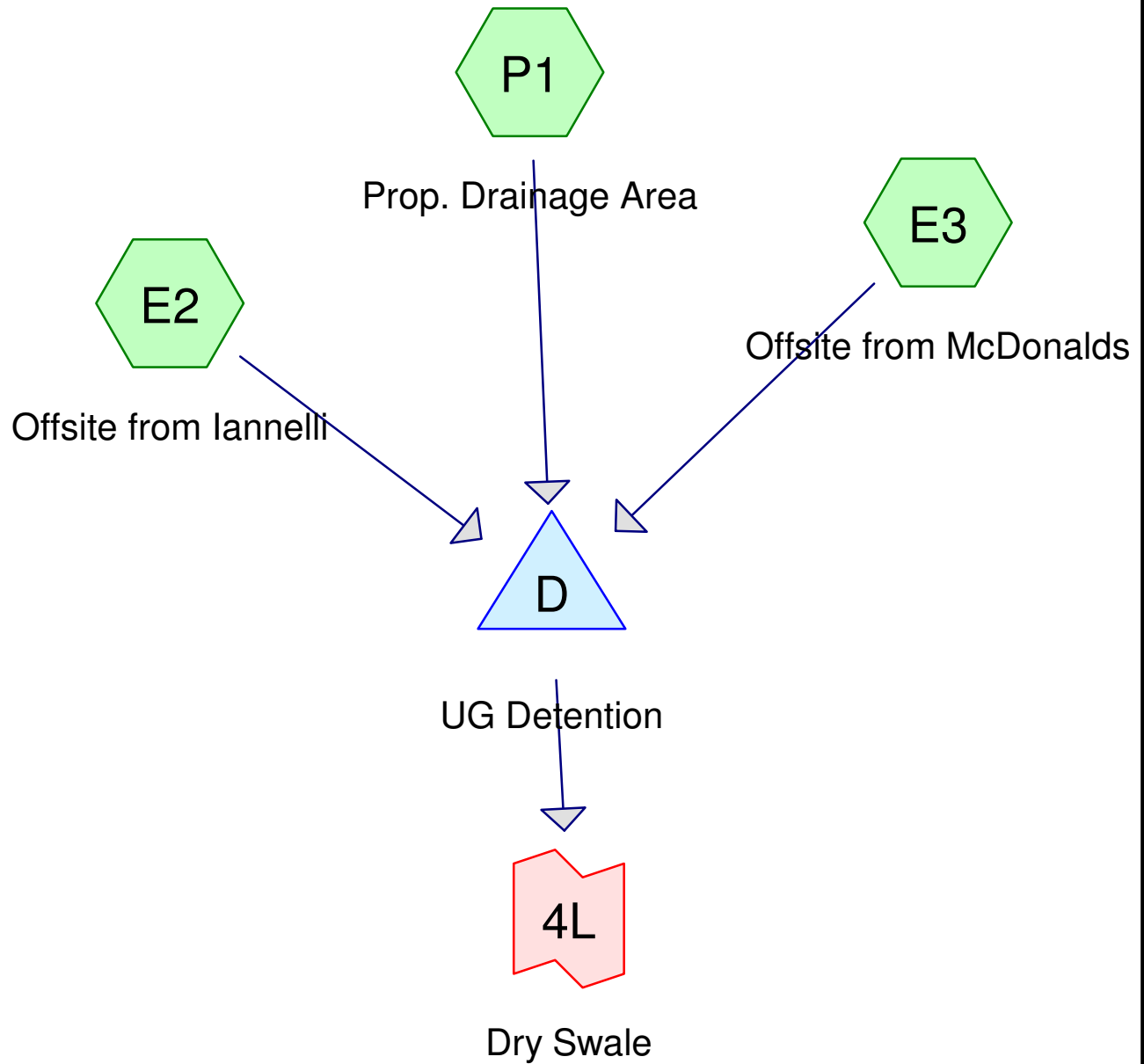
DRAWN BY:	REB
CHECKED BY:	APA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:
216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
UNDERGROUND DETENTION SYSTEM
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

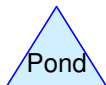
SHEET
C3.2
JOB NO.
22-5800



Subcat



Reach



Pond



Link

Routing Diagram for Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company, Printed 9/12/2022
HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 2

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.50 cfs @ 12.01 hrs, Volume= 0.030 af, Depth= 1.75"

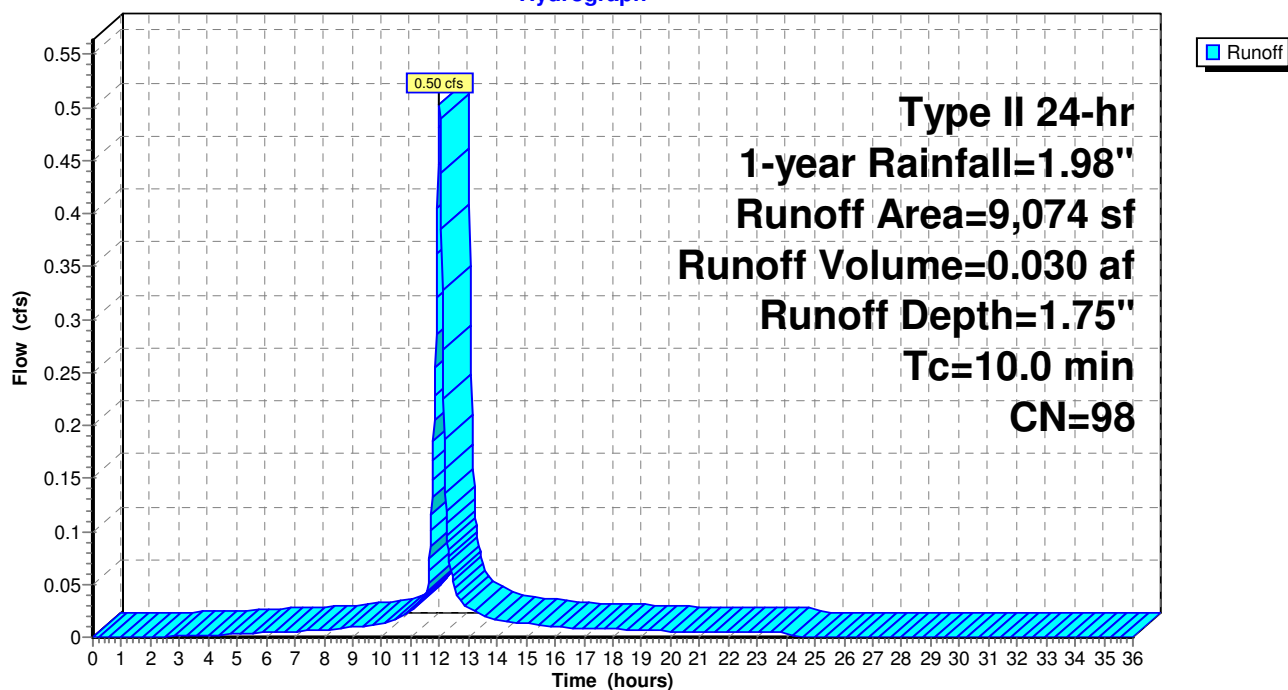
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 3

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.00 cfs @ 18.10 hrs, Volume= 0.000 af, Depth= 0.02"

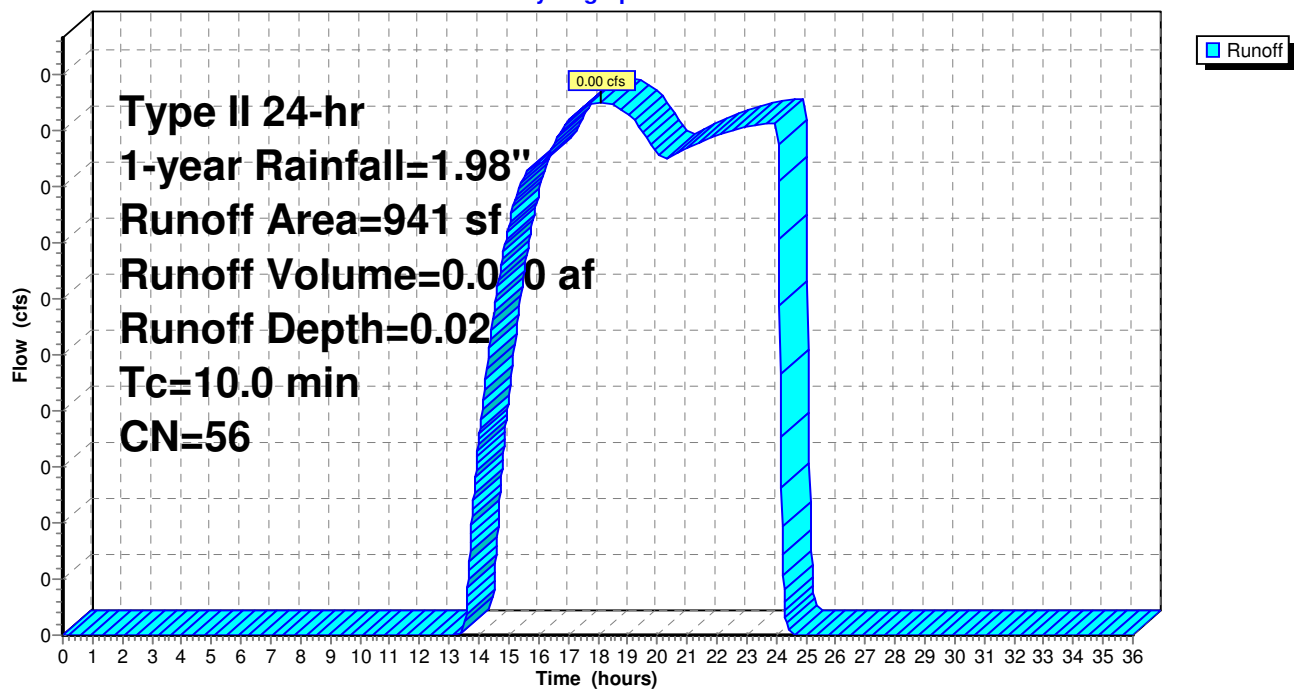
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 4

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 2.39 cfs @ 12.02 hrs, Volume= 0.129 af, Depth= 0.95"

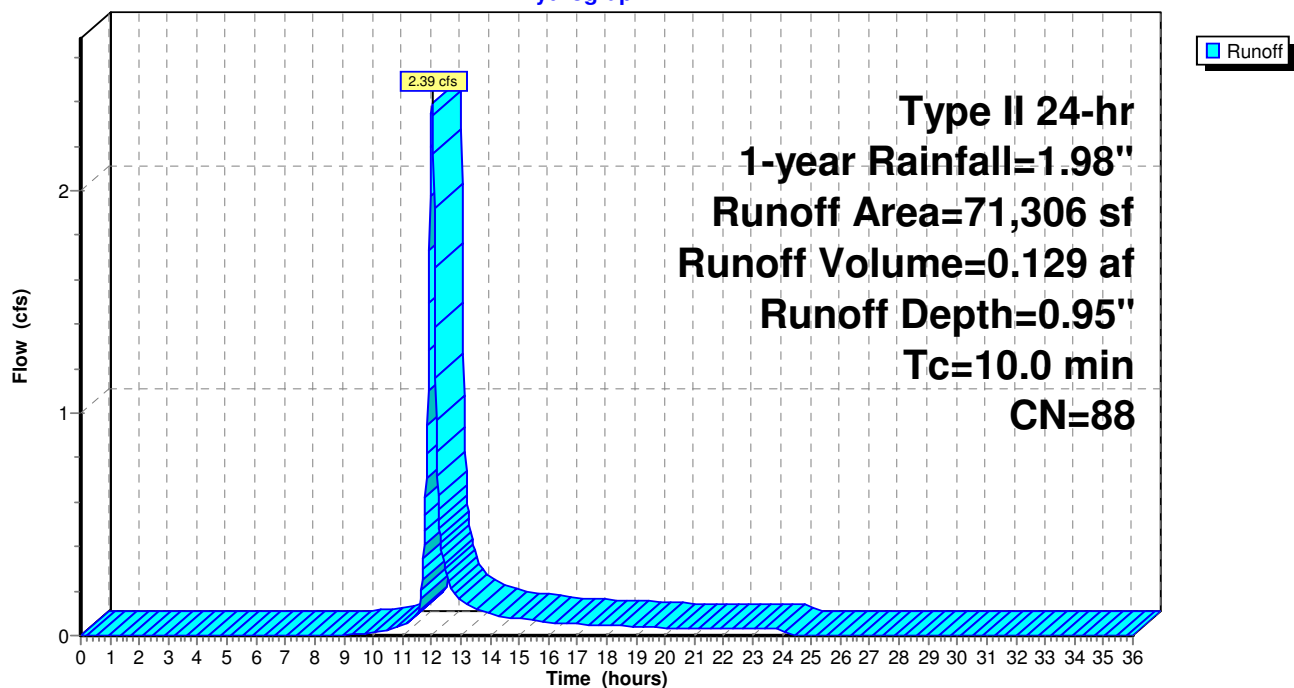
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 1-year Rainfall=1.98"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 5

Summary for Pond D: UG Detention

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 1.03" for 1-year event
Inflow = 2.90 cfs @ 12.02 hrs, Volume= 0.160 af
Outflow = 2.82 cfs @ 12.04 hrs, Volume= 0.156 af, Atten= 2%, Lag= 1.2 min
Primary = 2.82 cfs @ 12.04 hrs, Volume= 0.156 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 760.86' @ 12.04 hrs Surf.Area= 1,136 sf Storage= 685 cf

Plug-Flow detention time= 58.3 min calculated for 0.156 af (98% of inflow)
Center-of-Mass det. time= 44.2 min (868.0 - 823.8)

Volume	Invert	Avail.Storage	Storage Description
#1A	759.85'	1,076 cf	11.00'W x 103.30'L x 3.50'H Field A 3,977 cf Overall - 1,286 cf Embedded = 2,691 cf x 40.0% Voids
#2A	760.35'	1,286 cf	ADS_StormTech SC-740 +Cap x 28 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 14 Chambers
		2,363 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	759.85'	18.00" Round Culvert L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 759.85' / 759.22' S= 0.0209 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	759.85'	0.50" Vert. Orifice C= 0.600
#3	Device 1	760.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=2.82 cfs @ 12.04 hrs HW=760.86' TW=757.14' (Dynamic Tailwater)

1=Culvert (Passes 2.82 cfs of 3.44 cfs potential flow)

2=Orifice (Orifice Controls 0.01 cfs @ 4.80 fps)

3=Sharp-Crested Rectangular Weir (Weir Controls 2.81 cfs @ 1.97 fps)

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 6

Pond D: UG Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +12.0" End Stone x 2 = 103.30' Base Length

2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

28 Chambers x 45.9 cf = 1,286.3 cf Chamber Storage

3,976.9 cf Field - 1,286.3 cf Chambers = 2,690.6 cf Stone x 40.0% Voids = 1,076.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,362.6 cf = 0.054 af

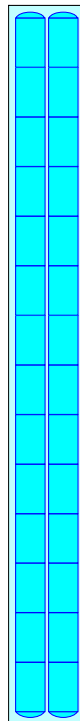
Overall Storage Efficiency = 59.4%

Overall System Size = 103.30' x 11.00' x 3.50'

28 Chambers

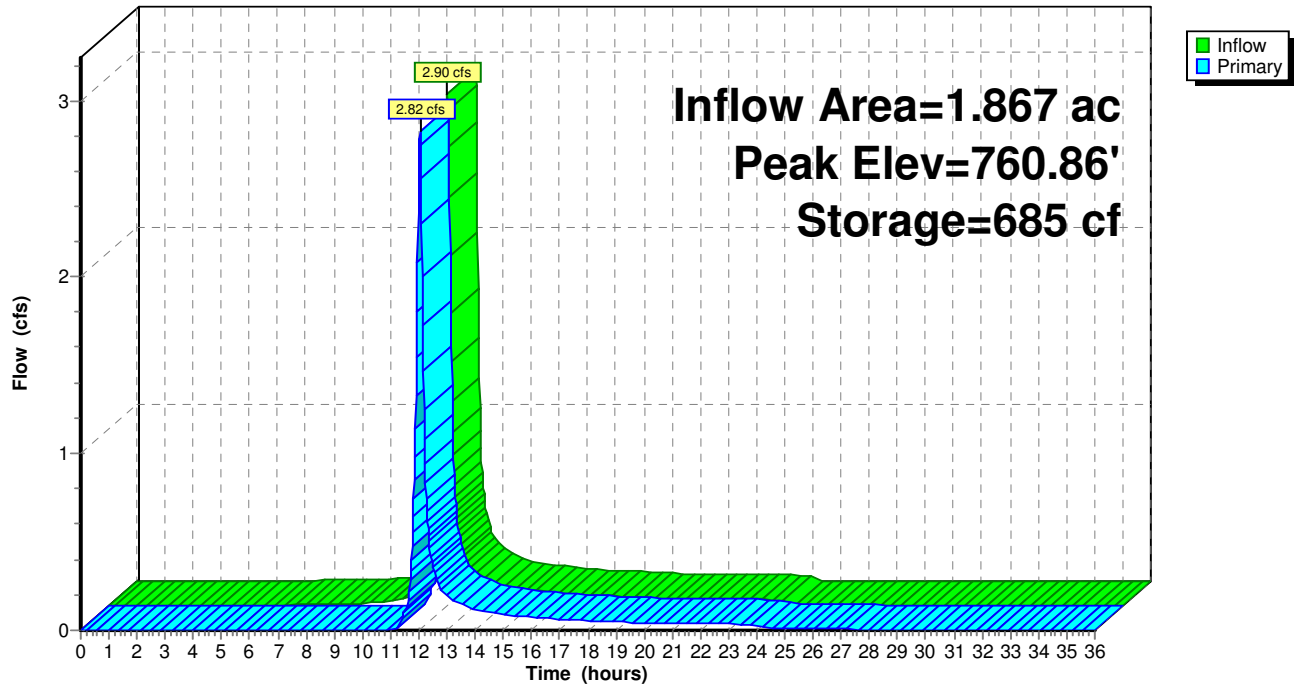
147.3 cy Field

99.7 cy Stone



Pond D: UG Detention

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 1-year Rainfall=1.98"

Printed 9/12/2022

Page 8

Summary for Link 4L: Dry Swale

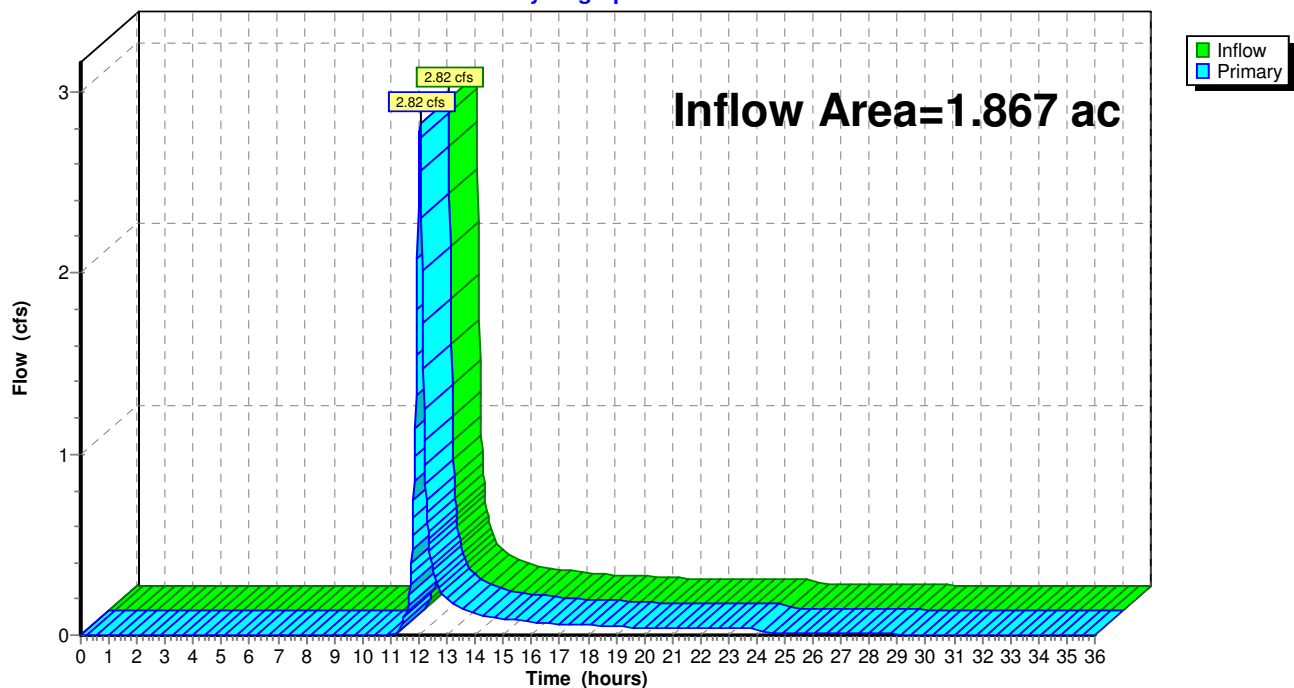
Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth > 1.00" for 1-year event
Inflow = 2.82 cfs @ 12.04 hrs, Volume= 0.156 af
Primary = 2.82 cfs @ 12.04 hrs, Volume= 0.156 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Fixed water surface Elevation= 757.14'

Link 4L: Dry Swale

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 9

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.63 cfs @ 12.01 hrs, Volume= 0.038 af, Depth= 2.21"

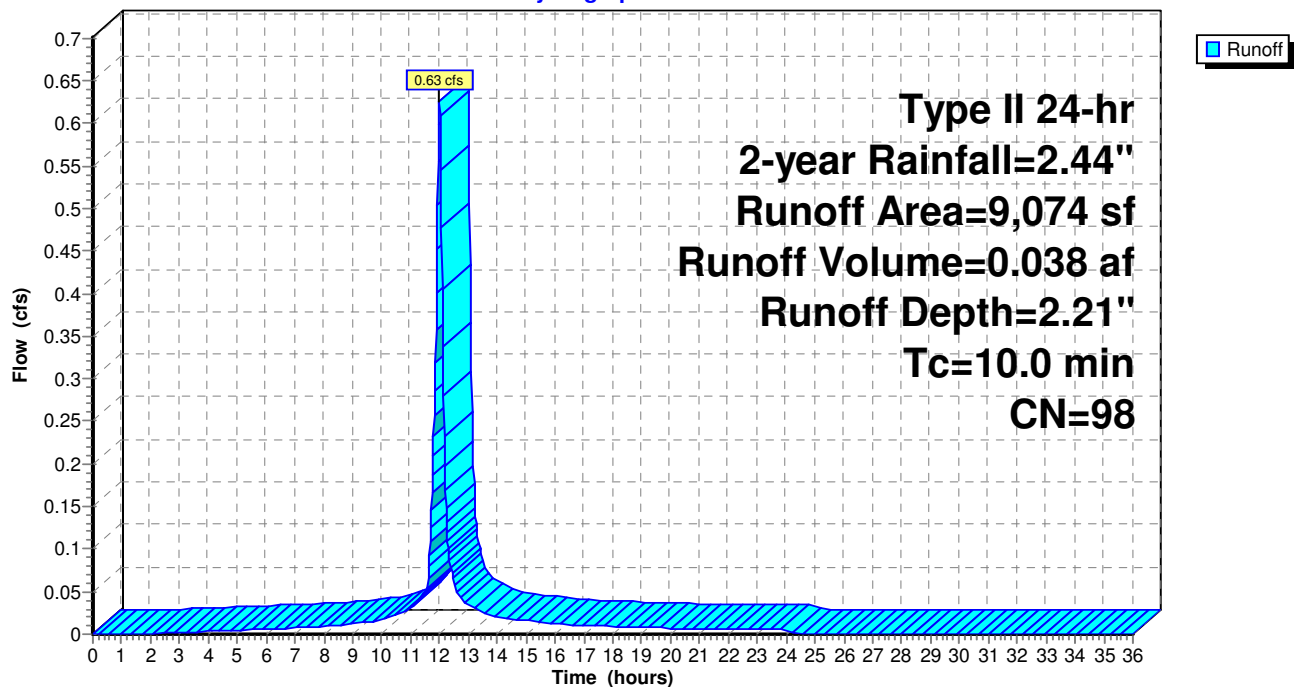
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.00 cfs @ 12.47 hrs, Volume= 0.000 af, Depth= 0.09"

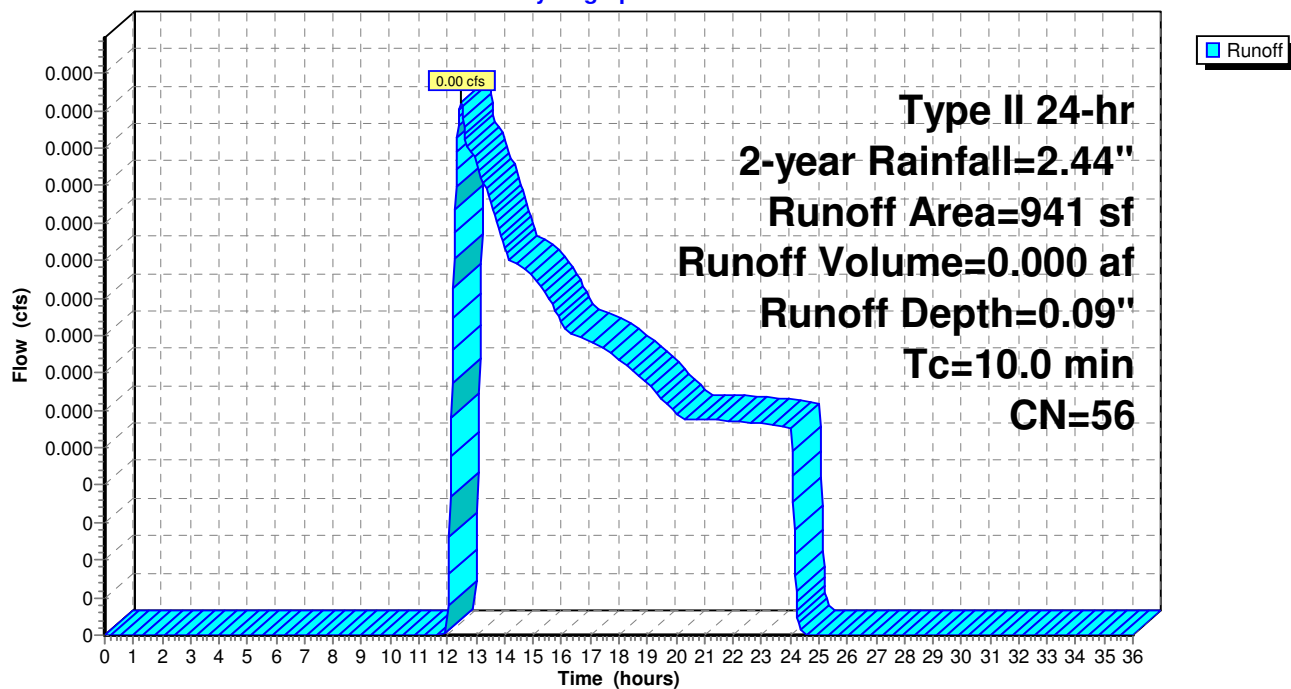
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 11

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 3.34 cfs @ 12.02 hrs, Volume= 0.181 af, Depth= 1.33"

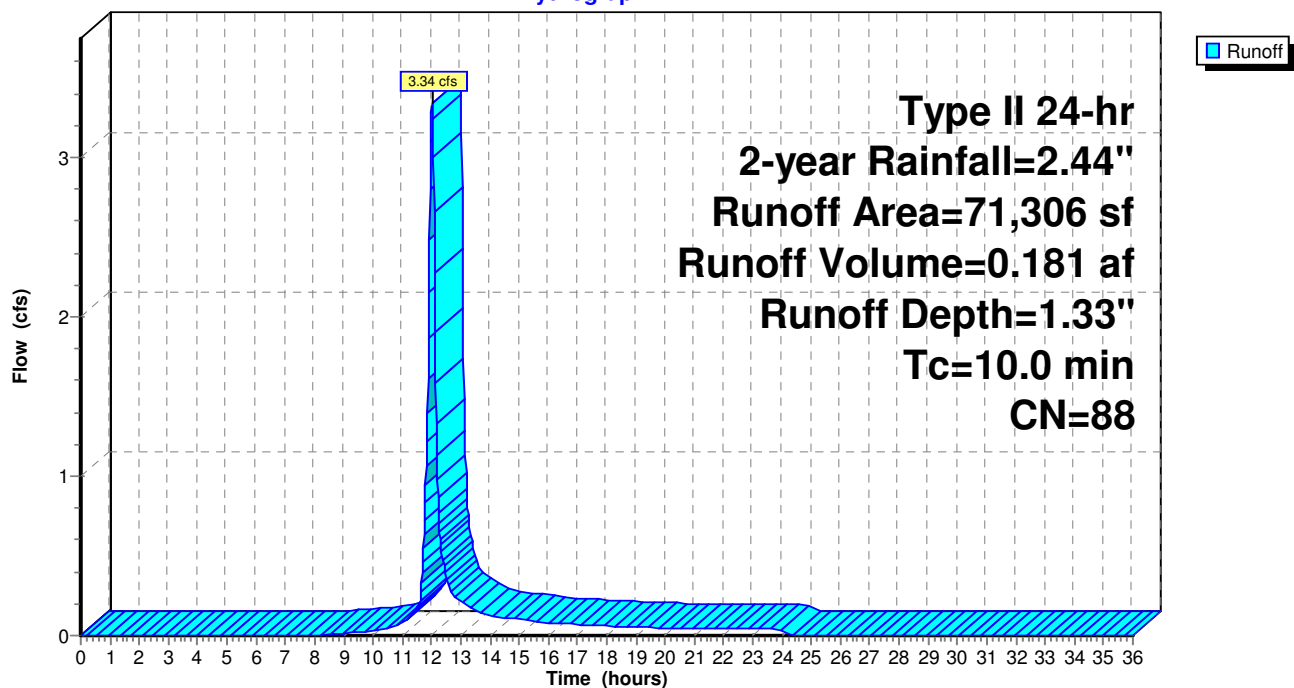
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 2-year Rainfall=2.44"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 12

Summary for Pond D: UG Detention

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 1.41" for 2-year event
Inflow = 3.97 cfs @ 12.02 hrs, Volume= 0.220 af
Outflow = 3.89 cfs @ 12.03 hrs, Volume= 0.216 af, Atten= 2%, Lag= 1.1 min
Primary = 3.89 cfs @ 12.03 hrs, Volume= 0.216 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 760.95' @ 12.03 hrs Surf.Area= 1,136 sf Storage= 761 cf

Plug-Flow detention time= 45.4 min calculated for 0.216 af (98% of inflow)
Center-of-Mass det. time= 34.6 min (850.7 - 816.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	759.85'	1,076 cf	11.00'W x 103.30'L x 3.50'H Field A 3,977 cf Overall - 1,286 cf Embedded = 2,691 cf x 40.0% Voids
#2A	760.35'	1,286 cf	ADS_StormTech SC-740 +Cap x 28 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 14 Chambers
		2,363 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	759.85'	18.00" Round Culvert L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 759.85' / 759.22' S= 0.0209 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	759.85'	0.50" Vert. Orifice C= 0.600
#3	Device 1	760.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=3.87 cfs @ 12.03 hrs HW=760.95' TW=757.14' (Dynamic Tailwater)

1=Culvert (Passes 3.87 cfs of 3.92 cfs potential flow)

2=Orifice (Orifice Controls 0.01 cfs @ 5.00 fps)

3=Sharp-Crested Rectangular Weir (Weir Controls 3.87 cfs @ 2.20 fps)

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 2-year Rainfall=2.44"

Printed 9/12/2022

Page 13

Pond D: UG Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +12.0" End Stone x 2 = 103.30' Base Length

2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

28 Chambers x 45.9 cf = 1,286.3 cf Chamber Storage

3,976.9 cf Field - 1,286.3 cf Chambers = 2,690.6 cf Stone x 40.0% Voids = 1,076.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,362.6 cf = 0.054 af

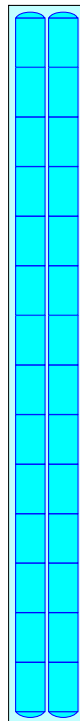
Overall Storage Efficiency = 59.4%

Overall System Size = 103.30' x 11.00' x 3.50'

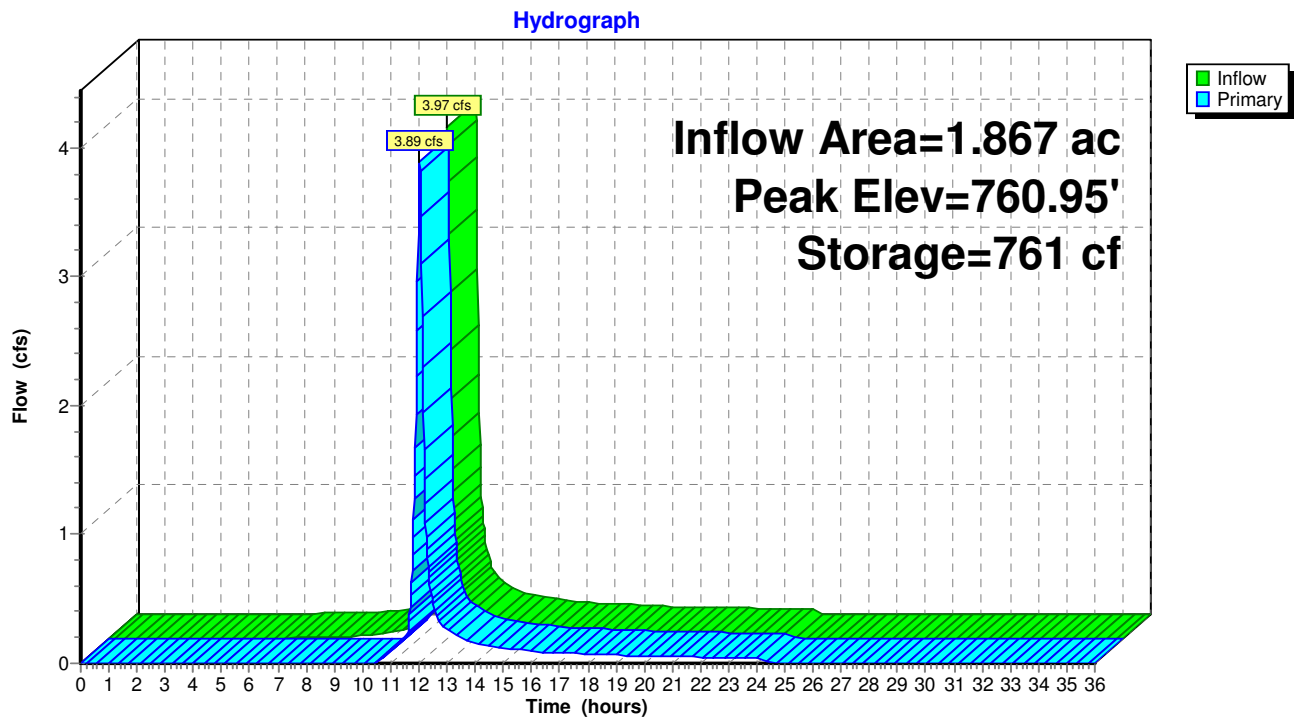
28 Chambers

147.3 cy Field

99.7 cy Stone



Pond D: UG Detention

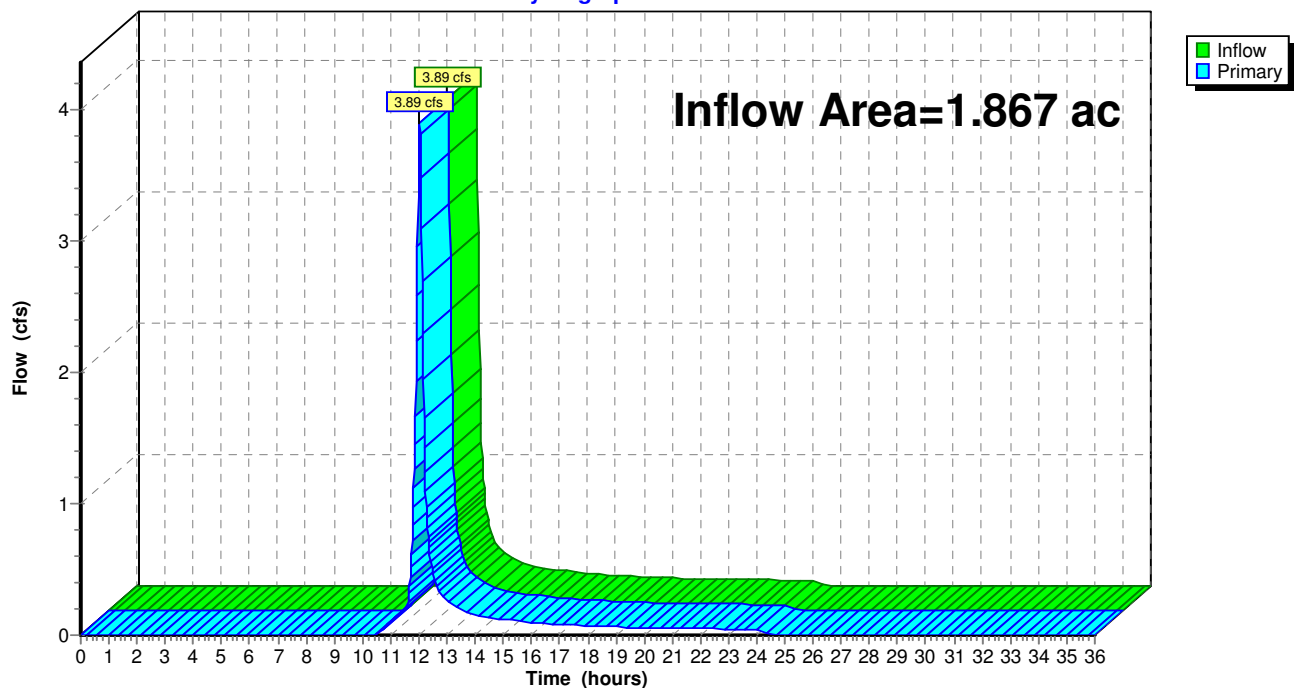


Summary for Link 4L: Dry Swale

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth > 1.39" for 2-year event
Inflow = 3.89 cfs @ 12.03 hrs, Volume= 0.216 af
Primary = 3.89 cfs @ 12.03 hrs, Volume= 0.216 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Fixed water surface Elevation= 757.14'

Link 4L: Dry Swale**Hydrograph**

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 16

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.79 cfs @ 12.01 hrs, Volume= 0.049 af, Depth= 2.83"

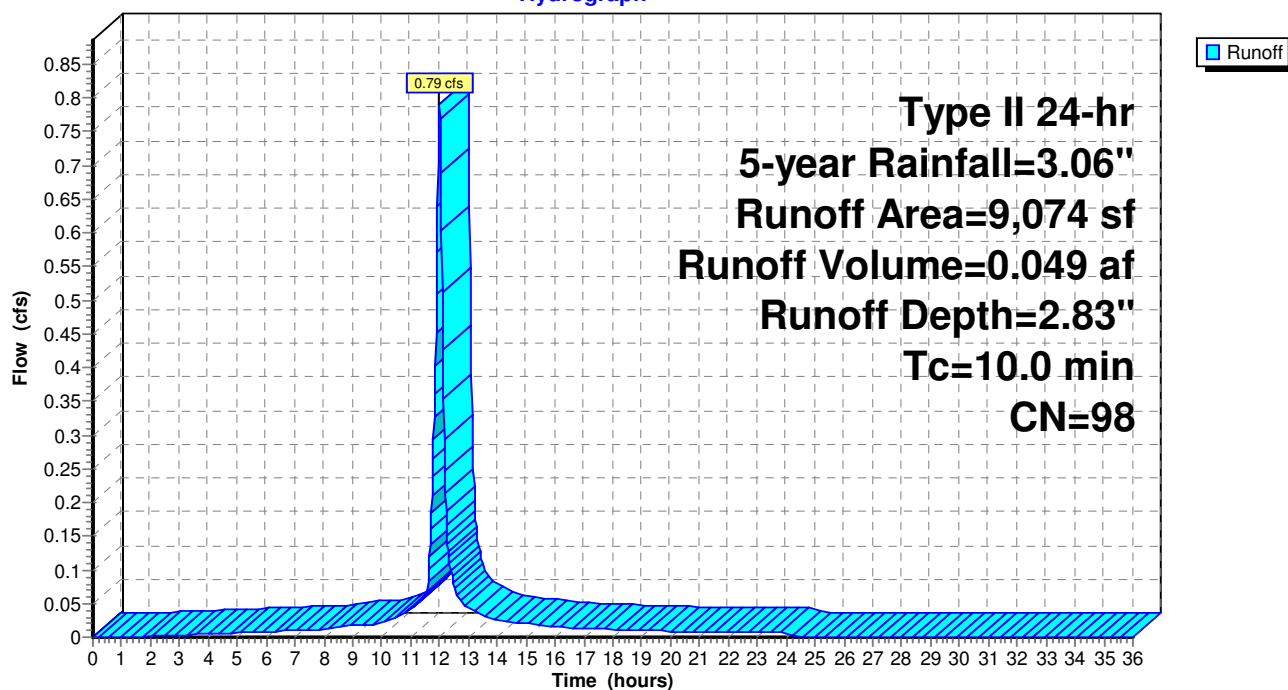
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 5-year Rainfall=3.06"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 17

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.00 cfs @ 12.07 hrs, Volume= 0.000 af, Depth= 0.24"

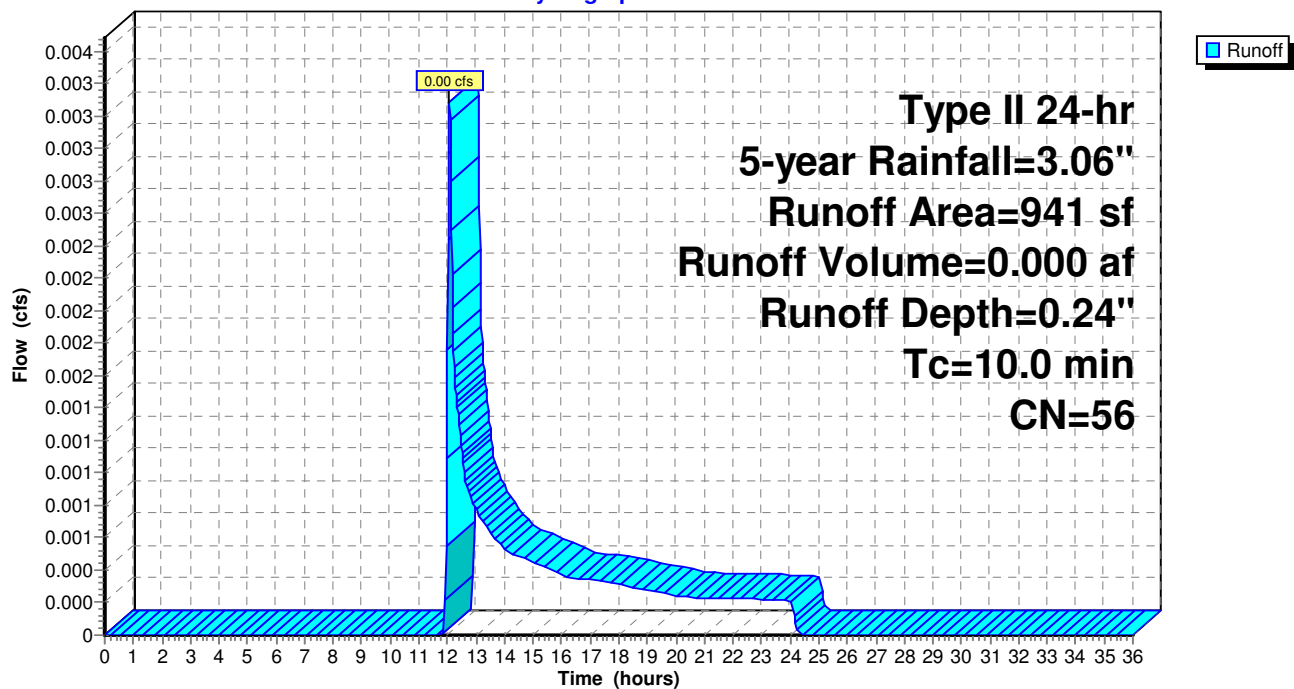
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 5-year Rainfall=3.06"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 18

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 4.66 cfs @ 12.02 hrs, Volume= 0.255 af, Depth= 1.87"

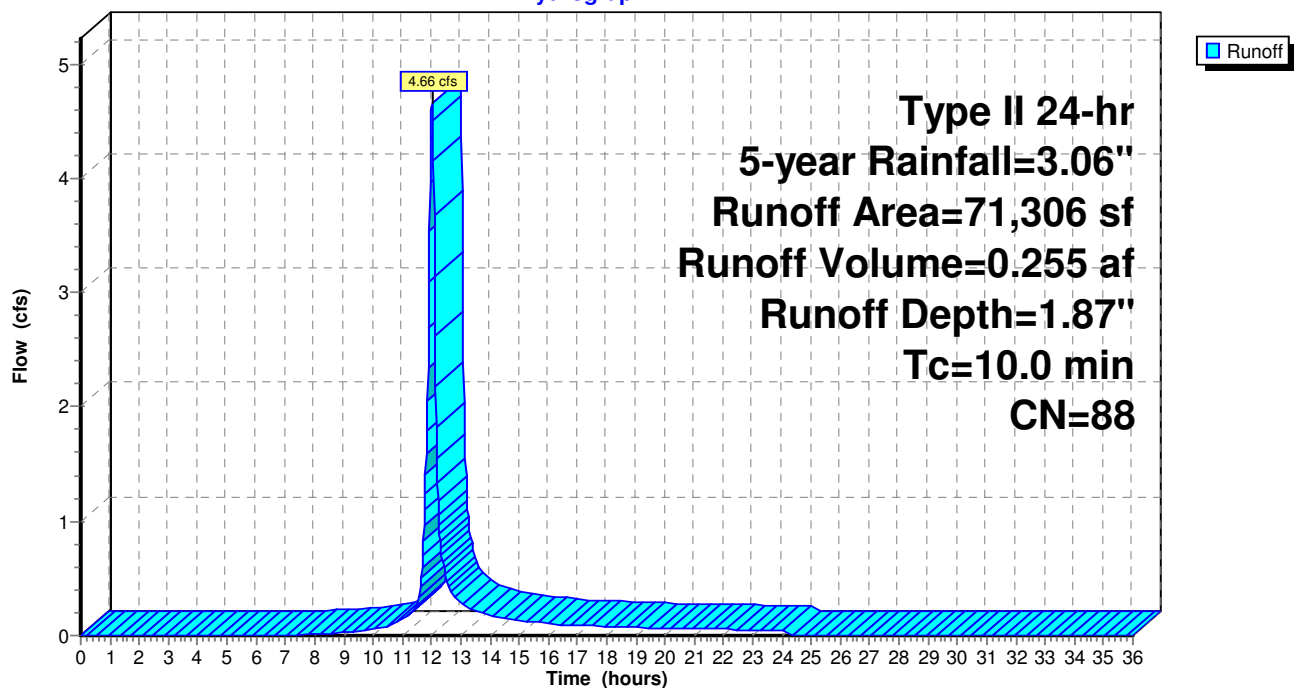
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 5-year Rainfall=3.06"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 19

Summary for Pond D: UG Detention

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 1.96" for 5-year event
Inflow = 5.46 cfs @ 12.01 hrs, Volume= 0.305 af
Outflow = 5.11 cfs @ 12.05 hrs, Volume= 0.301 af, Atten= 6%, Lag= 2.0 min
Primary = 5.11 cfs @ 12.05 hrs, Volume= 0.301 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 761.17' @ 12.05 hrs Surf.Area= 1,136 sf Storage= 952 cf

Plug-Flow detention time= 35.3 min calculated for 0.301 af (99% of inflow)
Center-of-Mass det. time= 27.3 min (835.4 - 808.0)

Volume	Invert	Avail.Storage	Storage Description
#1A	759.85'	1,076 cf	11.00'W x 103.30'L x 3.50'H Field A 3,977 cf Overall - 1,286 cf Embedded = 2,691 cf x 40.0% Voids
#2A	760.35'	1,286 cf	ADS_StormTech SC-740 +Cap x 28 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 14 Chambers
		2,363 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	759.85'	18.00" Round Culvert L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 759.85' / 759.22' S= 0.0209 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	759.85'	0.50" Vert. Orifice C= 0.600
#3	Device 1	760.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=5.09 cfs @ 12.05 hrs HW=761.17' TW=757.14' (Dynamic Tailwater)

1=Culvert (Inlet Controls 5.09 cfs @ 3.09 fps)

2=Orifice (Passes < 0.01 cfs potential flow)

3=Sharp-Crested Rectangular Weir (Passes < 6.94 cfs potential flow)

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 5-year Rainfall=3.06"

Printed 9/12/2022

Page 20

Pond D: UG Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +12.0" End Stone x 2 = 103.30' Base Length

2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

28 Chambers x 45.9 cf = 1,286.3 cf Chamber Storage

3,976.9 cf Field - 1,286.3 cf Chambers = 2,690.6 cf Stone x 40.0% Voids = 1,076.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,362.6 cf = 0.054 af

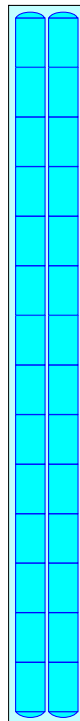
Overall Storage Efficiency = 59.4%

Overall System Size = 103.30' x 11.00' x 3.50'

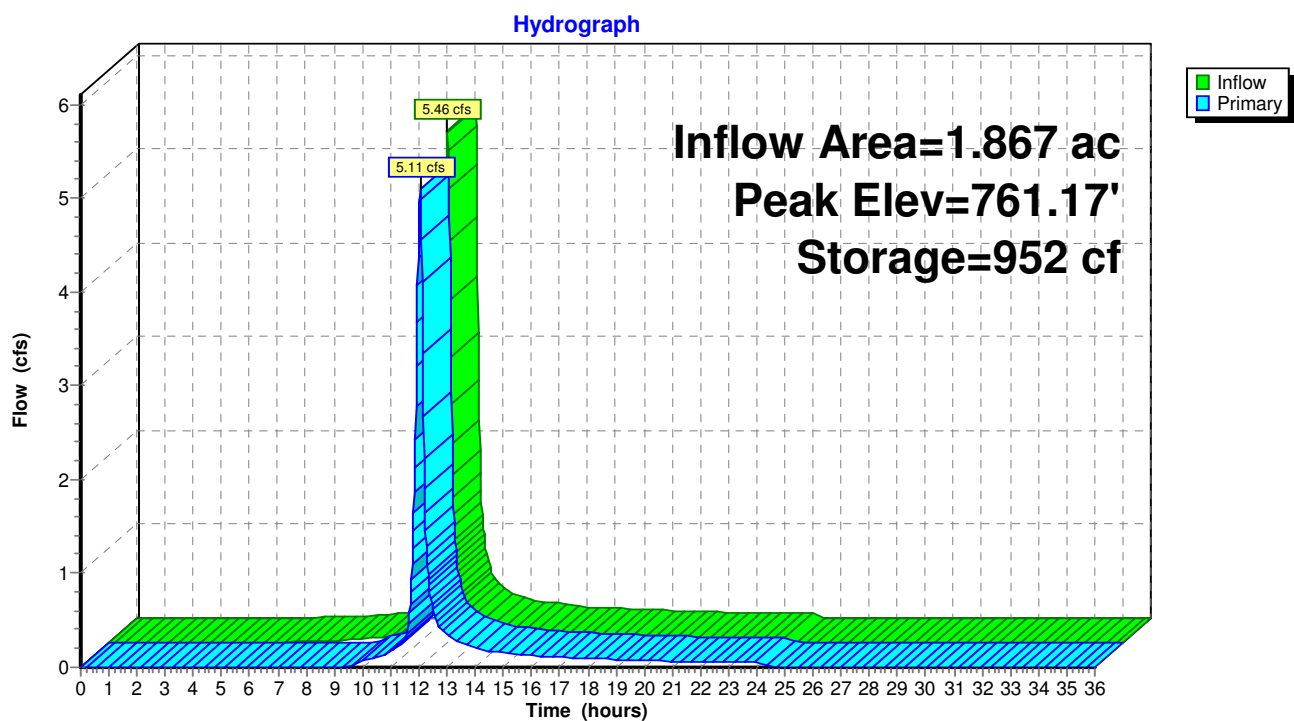
28 Chambers

147.3 cy Field

99.7 cy Stone



Pond D: UG Detention

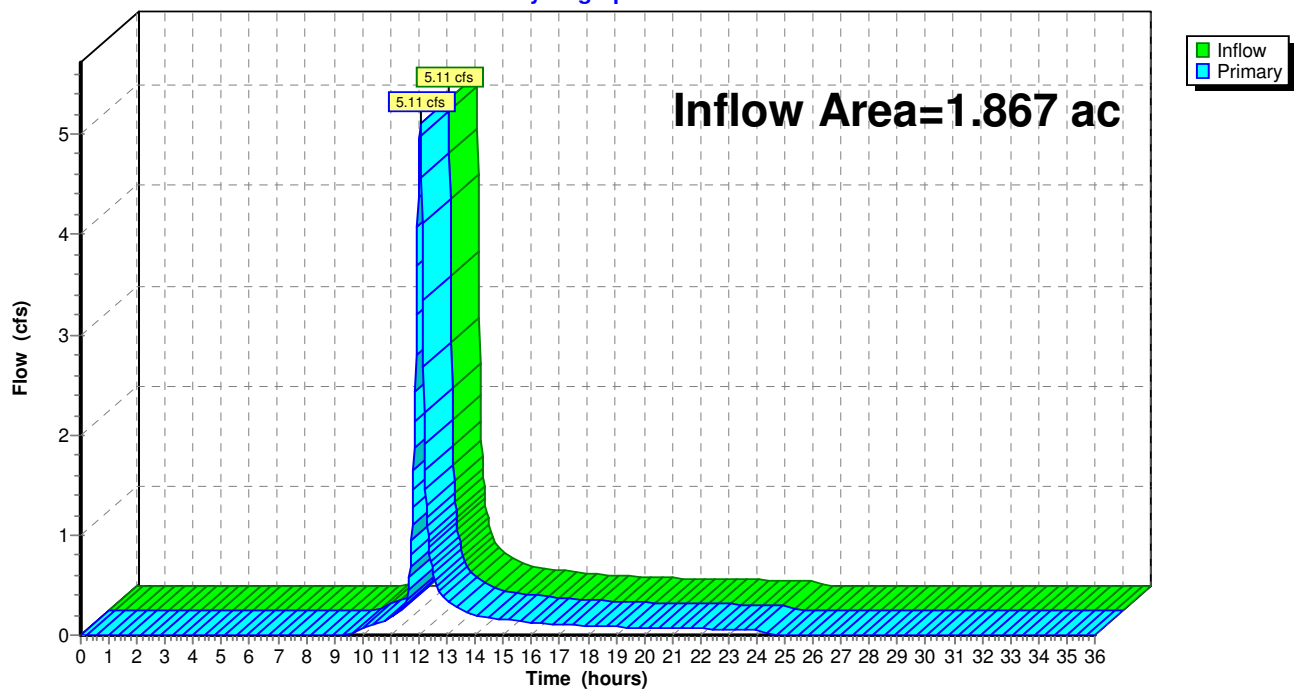


Summary for Link 4L: Dry Swale

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth > 1.93" for 5-year event
Inflow = 5.11 cfs @ 12.05 hrs, Volume= 0.301 af
Primary = 5.11 cfs @ 12.05 hrs, Volume= 0.301 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Fixed water surface Elevation= 757.14'

Link 4L: Dry Swale**Hydrograph**

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 23

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 0.92 cfs @ 12.01 hrs, Volume= 0.058 af, Depth= 3.32"

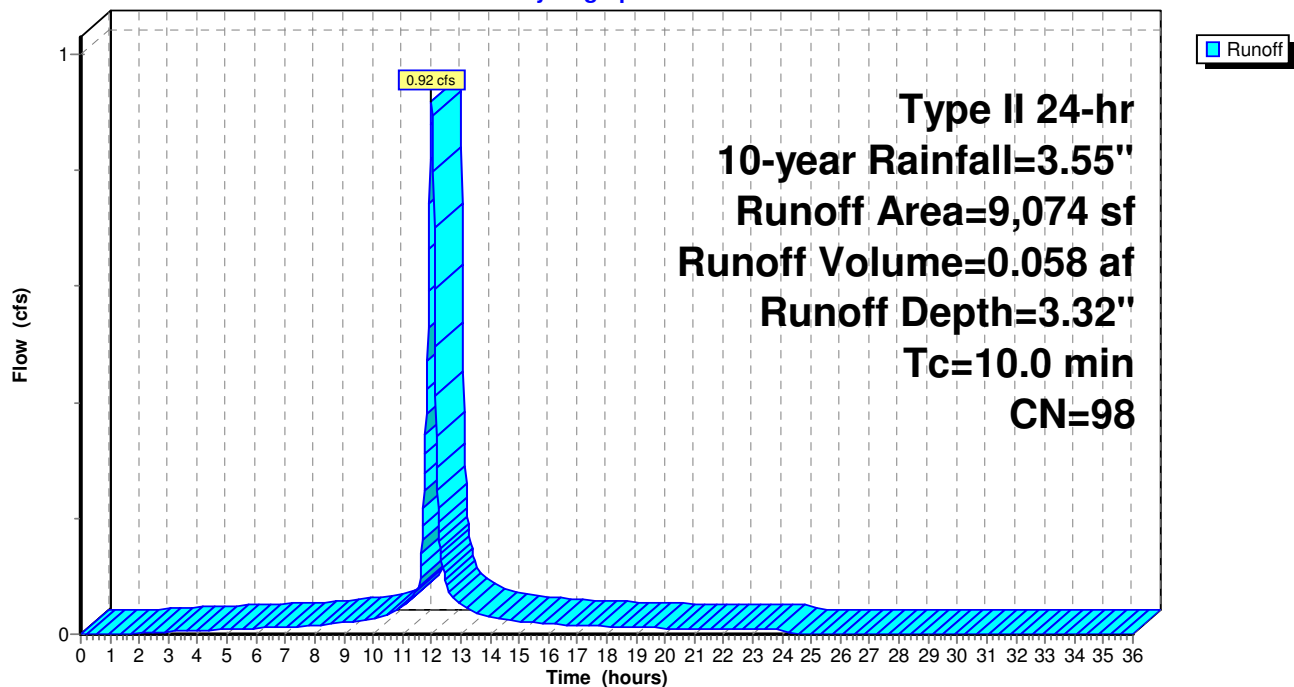
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 24

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.01 cfs @ 12.05 hrs, Volume= 0.001 af, Depth= 0.40"

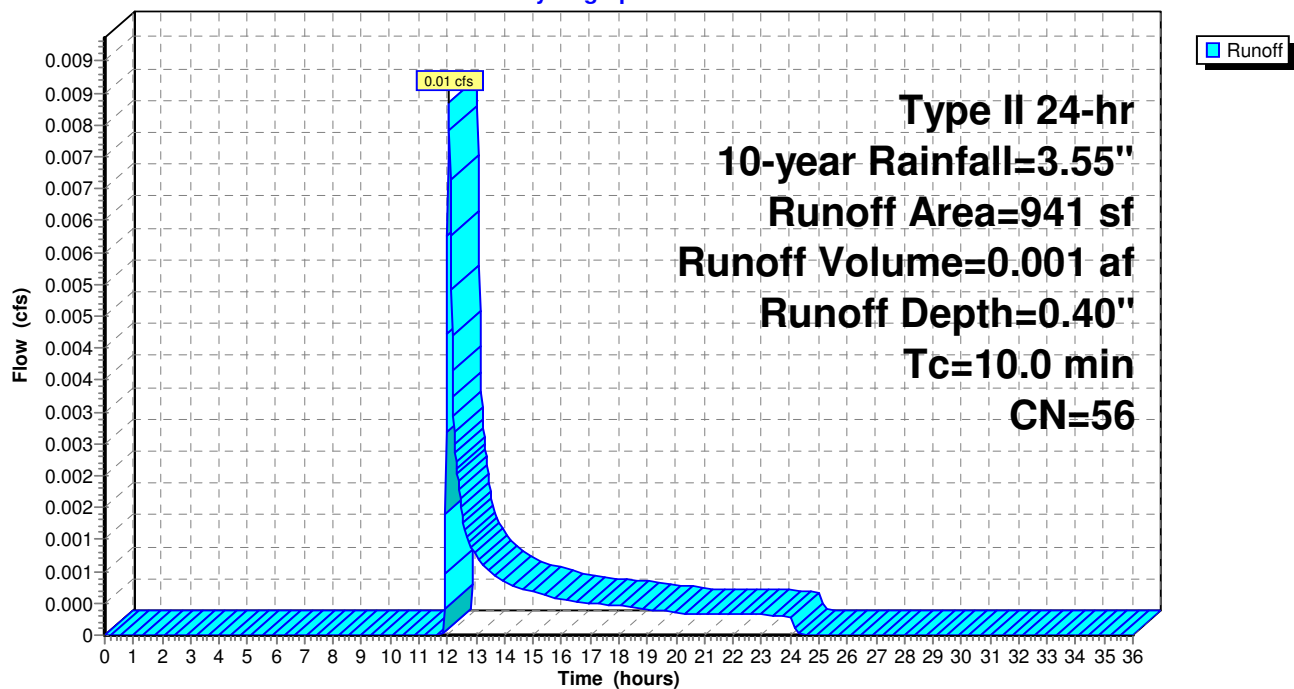
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 25

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 5.72 cfs @ 12.01 hrs, Volume= 0.316 af, Depth= 2.31"

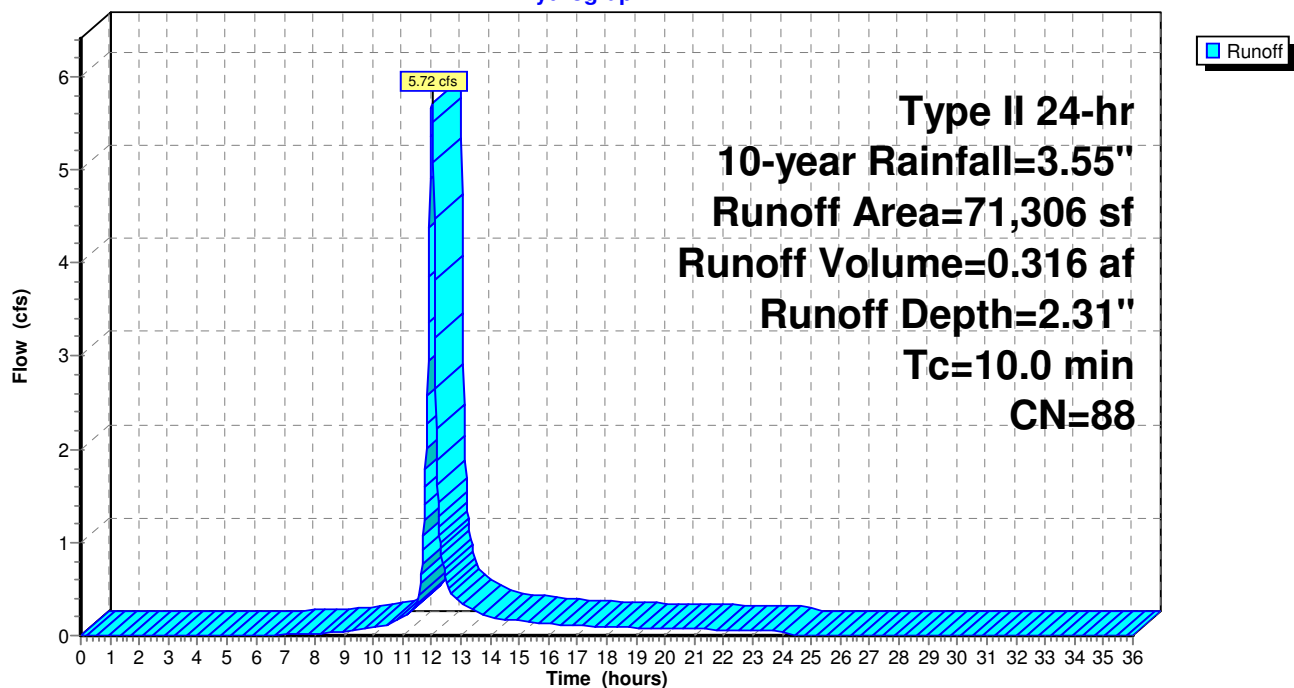
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 10-year Rainfall=3.55"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Type II 24-hr 10-year Rainfall=3.55"

Prepared by Bramhall Engineering & Surveying Company

Printed 9/12/2022

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Page 26

Summary for Pond D: UG Detention

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 2.40" for 10-year event
 Inflow = 6.65 cfs @ 12.01 hrs, Volume= 0.374 af
 Outflow = 6.07 cfs @ 12.05 hrs, Volume= 0.370 af, Atten= 9%, Lag= 2.4 min
 Primary = 6.07 cfs @ 12.05 hrs, Volume= 0.370 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
 Peak Elev= 761.42' @ 12.05 hrs Surf.Area= 1,136 sf Storage= 1,154 cf

Plug-Flow detention time= 29.9 min calculated for 0.370 af (99% of inflow)
 Center-of-Mass det. time= 23.7 min (826.6 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1A	759.85'	1,076 cf	11.00'W x 103.30'L x 3.50'H Field A 3,977 cf Overall - 1,286 cf Embedded = 2,691 cf x 40.0% Voids
#2A	760.35'	1,286 cf	ADS_StormTech SC-740 +Cap x 28 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 14 Chambers
		2,363 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	759.85'	18.00" Round Culvert L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 759.85' / 759.22' S= 0.0209 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	759.85'	0.50" Vert. Orifice C= 0.600
#3	Device 1	760.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=6.05 cfs @ 12.05 hrs HW=761.41' TW=757.14' (Dynamic Tailwater)

1=Culvert (Inlet Controls 6.05 cfs @ 3.42 fps)

2=Orifice (Passes < 0.01 cfs potential flow)

3=Sharp-Crested Rectangular Weir (Passes < 10.85 cfs potential flow)

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 10-year Rainfall=3.55"

Printed 9/12/2022

Page 27

Pond D: UG Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +12.0" End Stone x 2 = 103.30' Base Length

2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

28 Chambers x 45.9 cf = 1,286.3 cf Chamber Storage

3,976.9 cf Field - 1,286.3 cf Chambers = 2,690.6 cf Stone x 40.0% Voids = 1,076.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,362.6 cf = 0.054 af

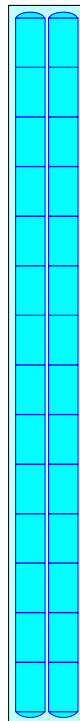
Overall Storage Efficiency = 59.4%

Overall System Size = 103.30' x 11.00' x 3.50'

28 Chambers

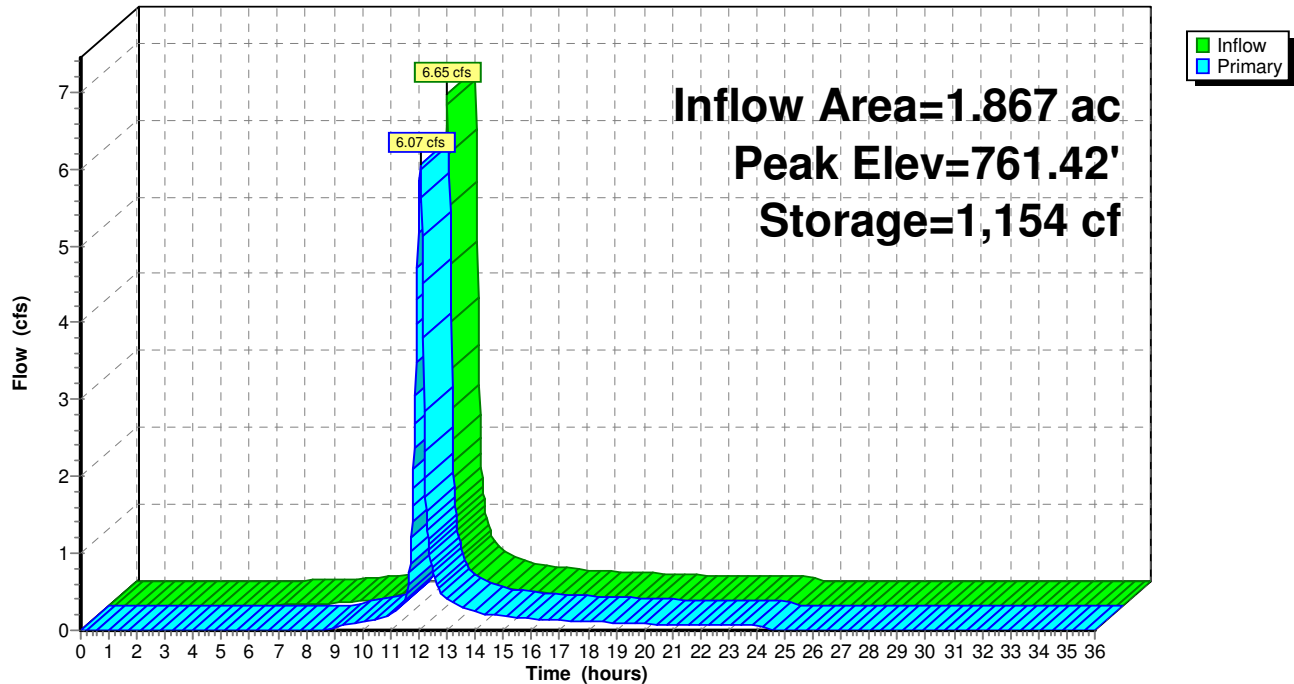
147.3 cy Field

99.7 cy Stone



Pond D: UG Detention

Hydrograph

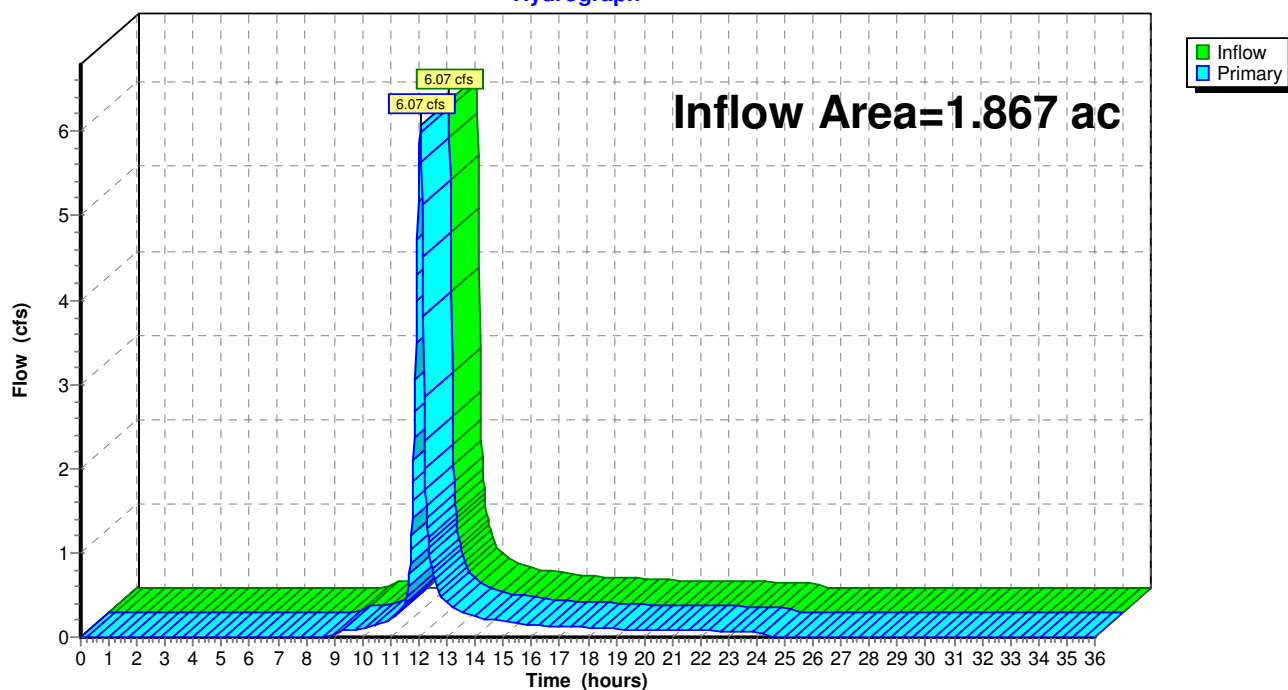


Summary for Link 4L: Dry Swale

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth > 2.38" for 10-year event
Inflow = 6.07 cfs @ 12.05 hrs, Volume= 0.370 af
Primary = 6.07 cfs @ 12.05 hrs, Volume= 0.370 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Fixed water surface Elevation= 757.14'

Link 4L: Dry Swale**Hydrograph**

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 30

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.13 cfs @ 12.01 hrs, Volume= 0.071 af, Depth= 4.11"

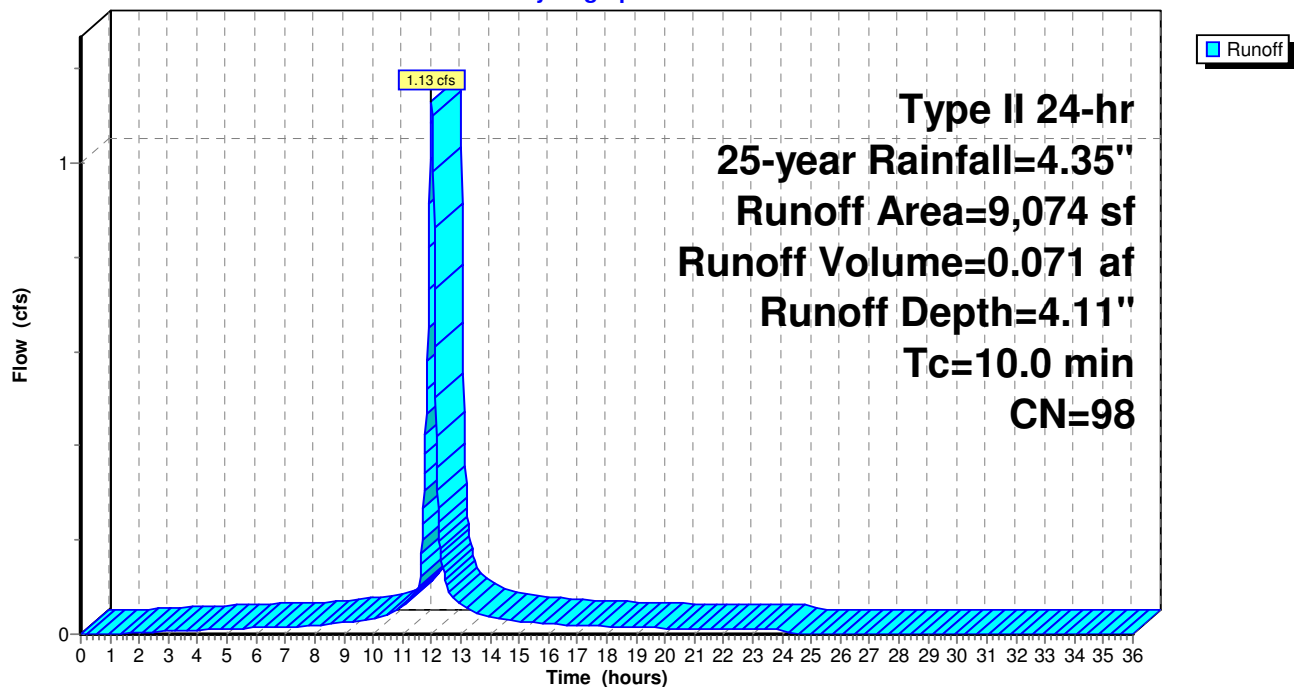
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 31

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.02 cfs @ 12.04 hrs, Volume= 0.001 af, Depth= 0.73"

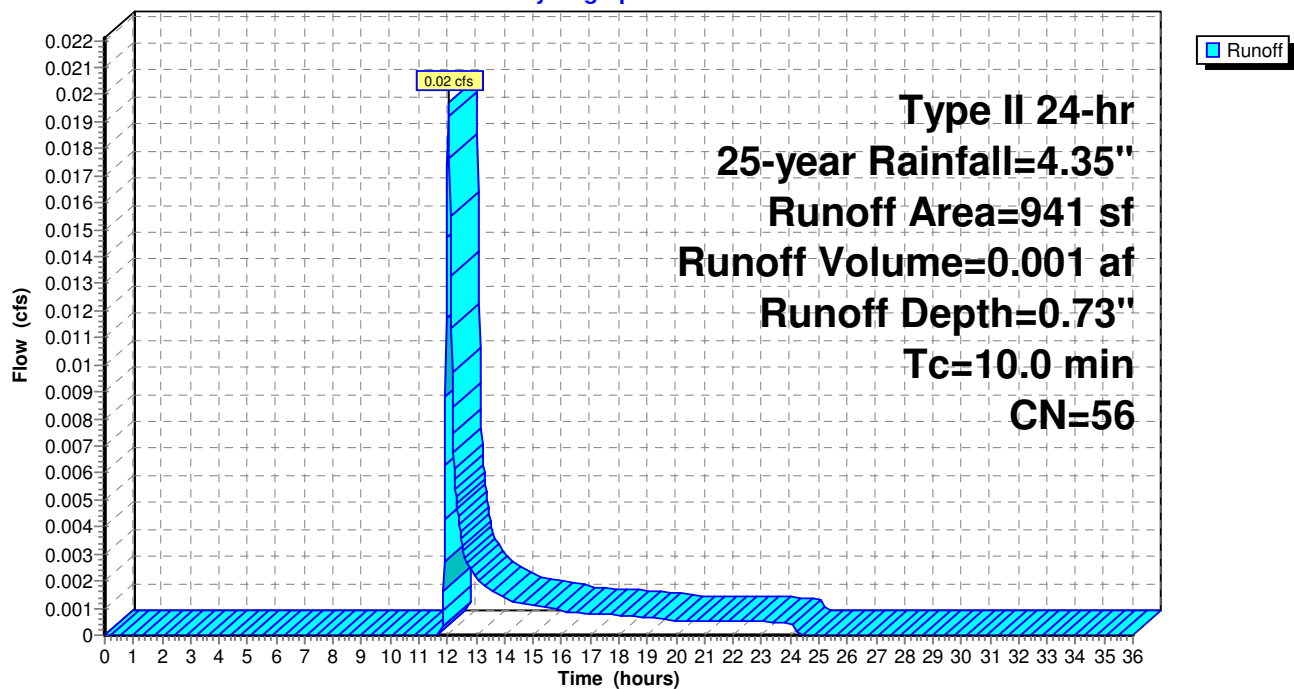
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 32

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 7.46 cfs @ 12.01 hrs, Volume= 0.417 af, Depth= 3.06"

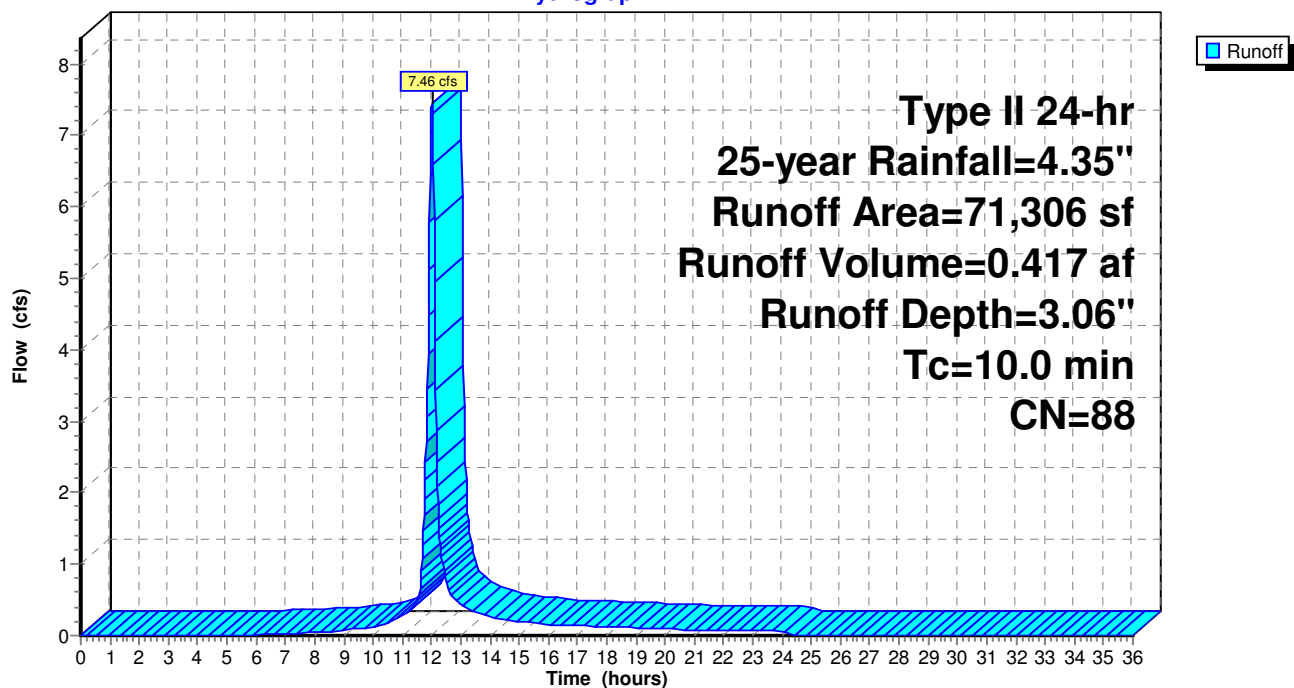
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 25-year Rainfall=4.35"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Type II 24-hr 25-year Rainfall=4.35"

Prepared by Bramhall Engineering & Surveying Company

Printed 9/12/2022

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Page 33

Summary for Pond D: UG Detention

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 3.15" for 25-year event
 Inflow = 8.61 cfs @ 12.01 hrs, Volume= 0.490 af
 Outflow = 7.67 cfs @ 12.06 hrs, Volume= 0.486 af, Atten= 11%, Lag= 2.7 min
 Primary = 7.67 cfs @ 12.06 hrs, Volume= 0.486 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
 Peak Elev= 761.90' @ 12.06 hrs Surf.Area= 1,136 sf Storage= 1,543 cf

Plug-Flow detention time= 24.4 min calculated for 0.485 af (99% of inflow)
 Center-of-Mass det. time= 19.7 min (815.8 - 796.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	759.85'	1,076 cf	11.00'W x 103.30'L x 3.50'H Field A 3,977 cf Overall - 1,286 cf Embedded = 2,691 cf x 40.0% Voids
#2A	760.35'	1,286 cf	ADS_StormTech SC-740 +Cap x 28 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 14 Chambers
		2,363 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	759.85'	18.00" Round Culvert L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 759.85' / 759.22' S= 0.0209 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	759.85'	0.50" Vert. Orifice C= 0.600
#3	Device 1	760.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=7.66 cfs @ 12.06 hrs HW=761.90' TW=757.14' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 7.66 cfs @ 4.34 fps)

↑ **2=Orifice** (Passes < 0.01 cfs potential flow)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 20.17 cfs potential flow)

Pond D: UG Detention - Chamber Wizard Field A**Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)**

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +12.0" End Stone x 2 = 103.30' Base Length

2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

28 Chambers x 45.9 cf = 1,286.3 cf Chamber Storage

3,976.9 cf Field - 1,286.3 cf Chambers = 2,690.6 cf Stone x 40.0% Voids = 1,076.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,362.6 cf = 0.054 af

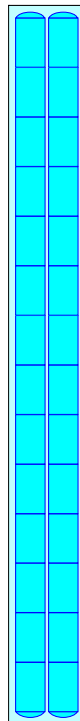
Overall Storage Efficiency = 59.4%

Overall System Size = 103.30' x 11.00' x 3.50'

28 Chambers

147.3 cy Field

99.7 cy Stone



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

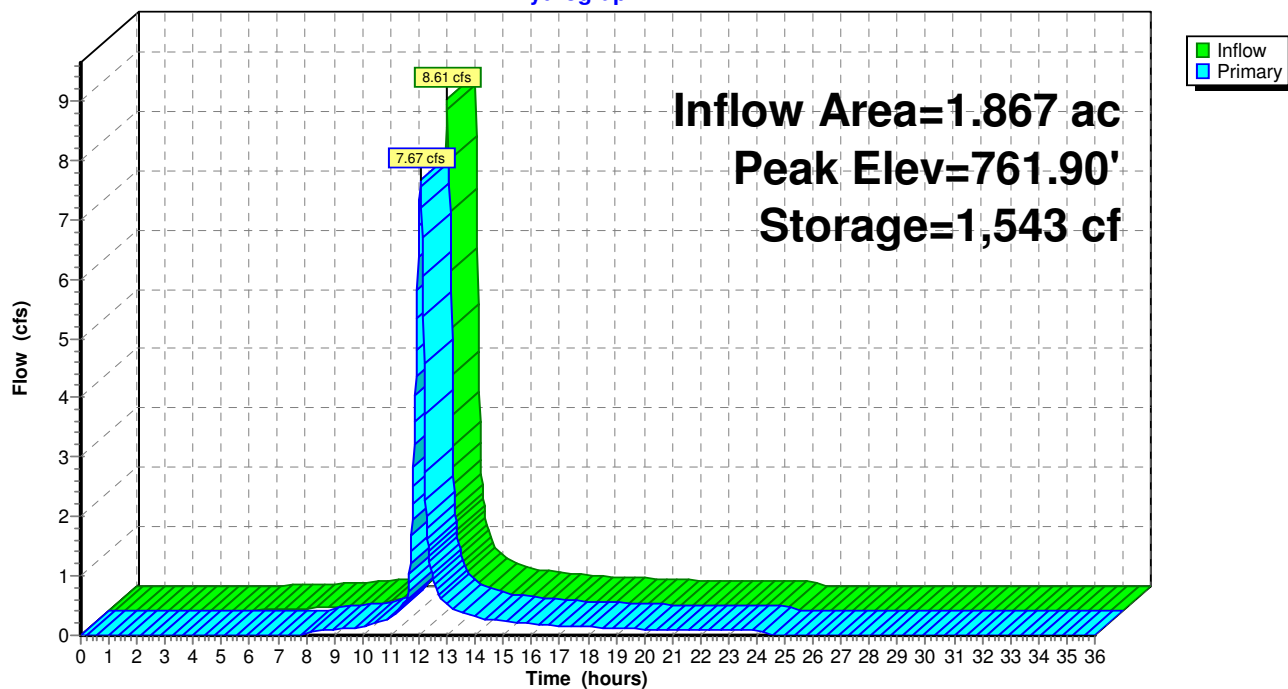
Type II 24-hr 25-year Rainfall=4.35"

Printed 9/12/2022

Page 35

Pond D: UG Detention

Hydrograph

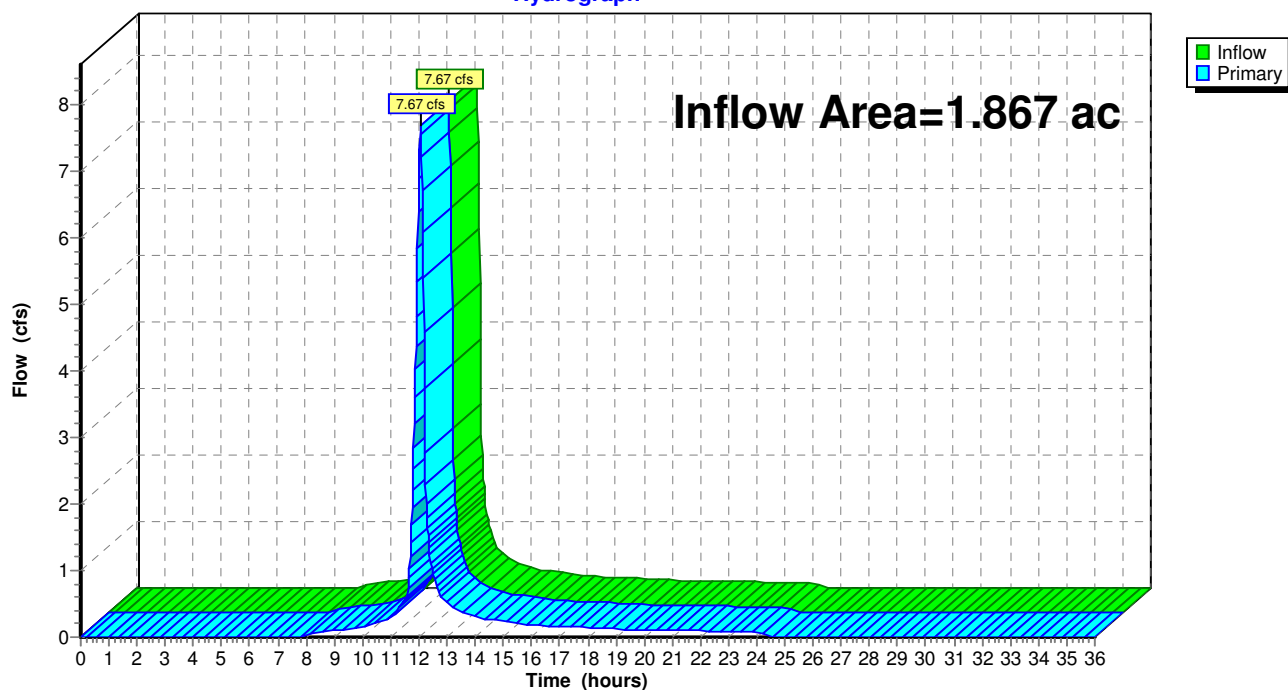


Summary for Link 4L: Dry Swale

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth > 3.12" for 25-year event
Inflow = 7.67 cfs @ 12.06 hrs, Volume= 0.486 af
Primary = 7.67 cfs @ 12.06 hrs, Volume= 0.486 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Fixed water surface Elevation= 757.14'

Link 4L: Dry Swale**Hydrograph**

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 37

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.32 cfs @ 12.01 hrs, Volume= 0.084 af, Depth= 4.84"

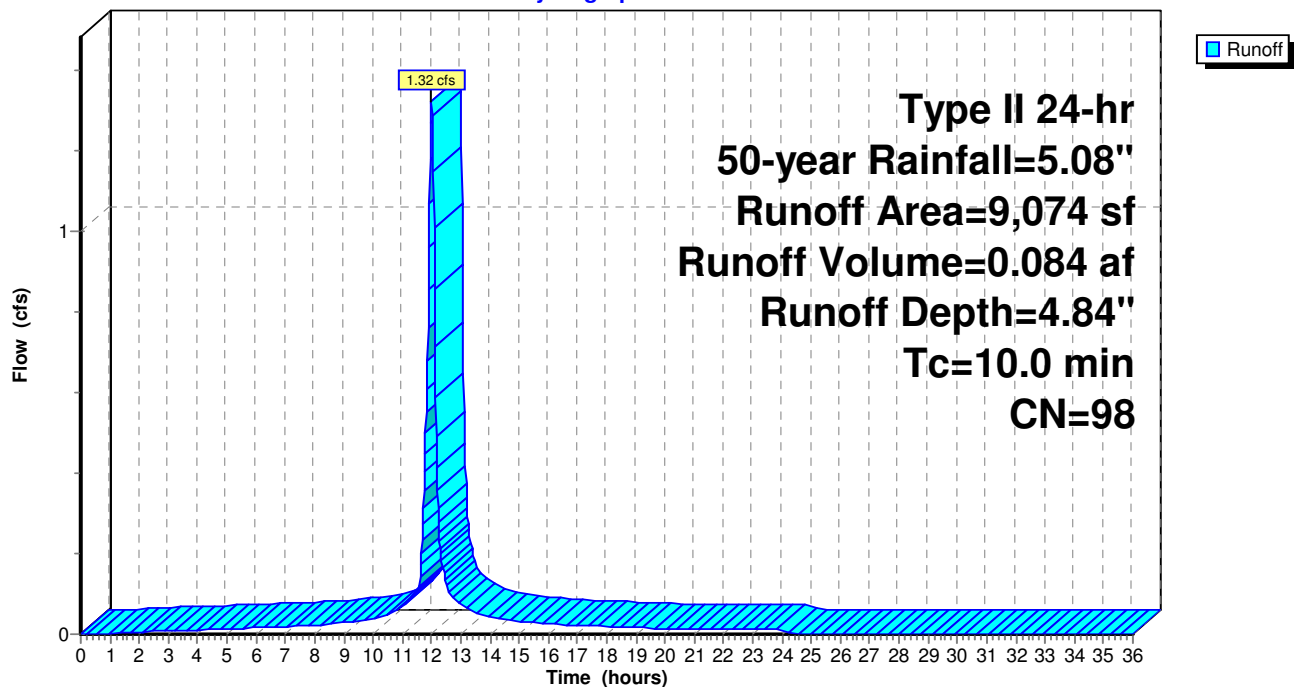
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 38

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.03 cfs @ 12.03 hrs, Volume= 0.002 af, Depth= 1.08"

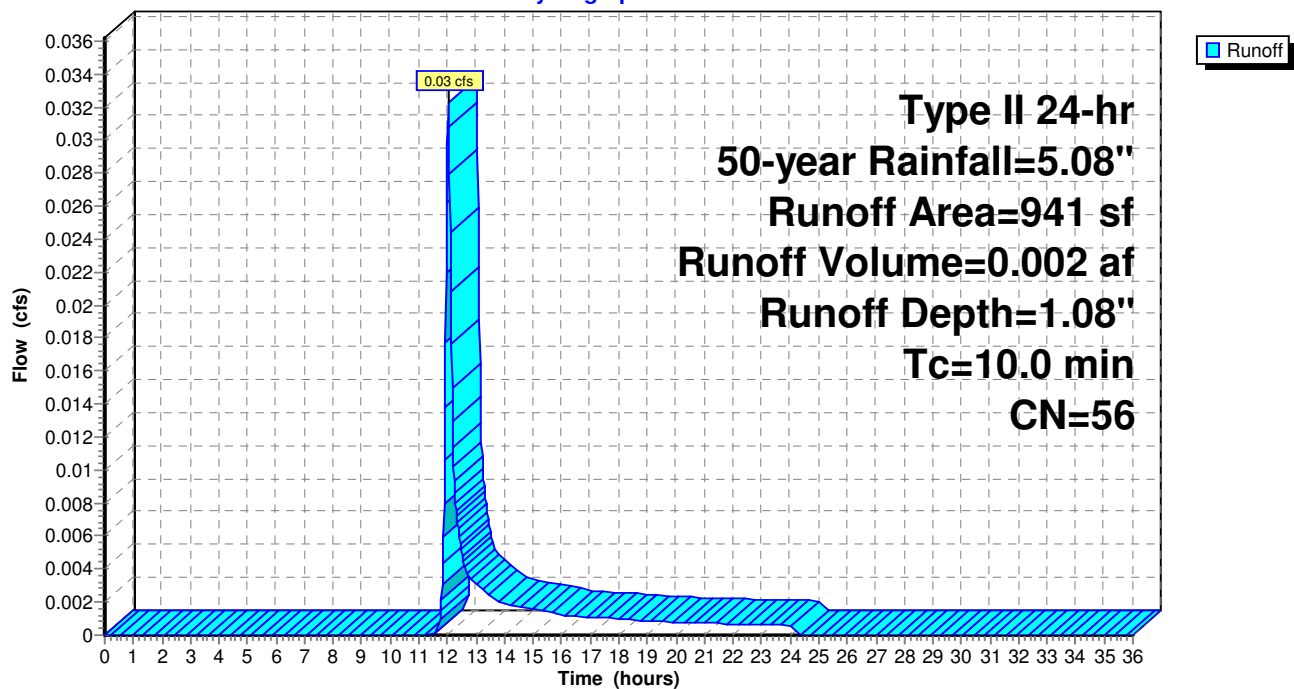
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 50-year Rainfall=5.08"

Printed 9/12/2022

Page 39

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 9.05 cfs @ 12.01 hrs, Volume= 0.511 af, Depth= 3.74"

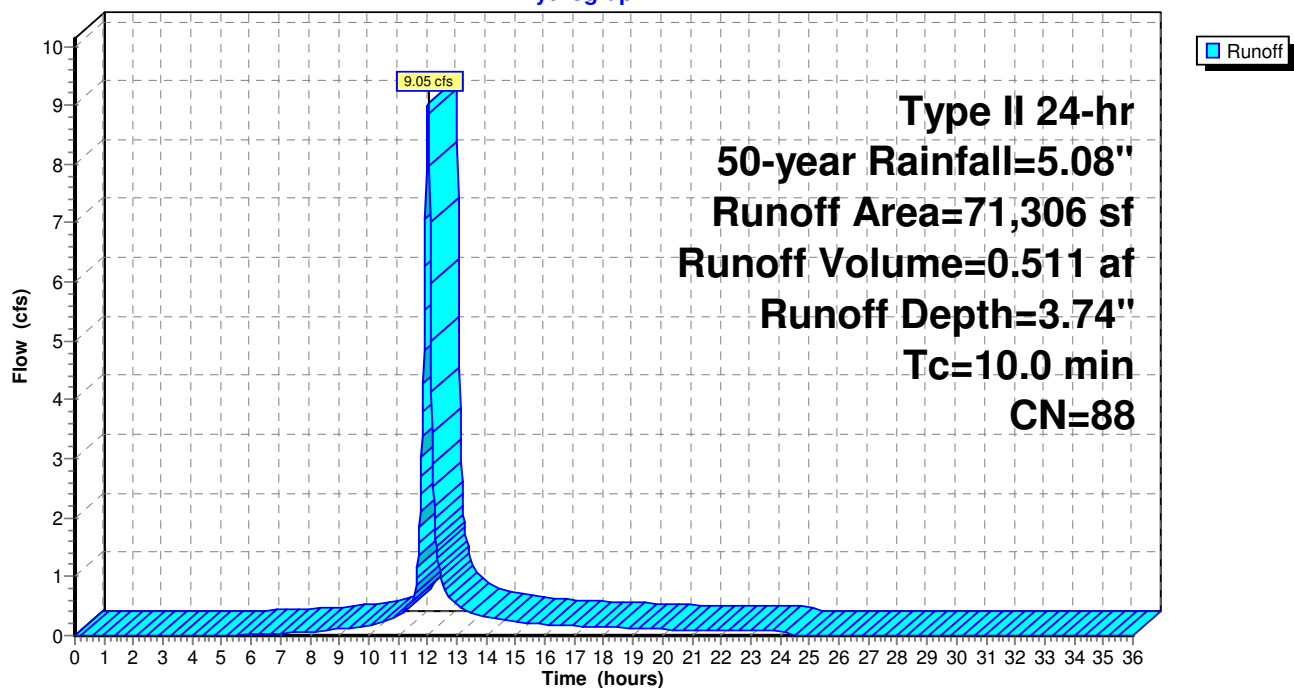
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 50-year Rainfall=5.08"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Type II 24-hr 50-year Rainfall=5.08"

Prepared by Bramhall Engineering & Surveying Company

Printed 9/12/2022

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Page 40

Summary for Pond D: UG Detention

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 3.84" for 50-year event
 Inflow = 10.41 cfs @ 12.01 hrs, Volume= 0.597 af
 Outflow = 9.16 cfs @ 12.06 hrs, Volume= 0.593 af, Atten= 12%, Lag= 2.8 min
 Primary = 9.16 cfs @ 12.06 hrs, Volume= 0.593 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
 Peak Elev= 762.46' @ 12.06 hrs Surf.Area= 1,136 sf Storage= 1,930 cf

Plug-Flow detention time= 21.5 min calculated for 0.593 af (99% of inflow)
 Center-of-Mass det. time= 17.2 min (808.3 - 791.1)

Volume	Invert	Avail.Storage	Storage Description
#1A	759.85'	1,076 cf	11.00'W x 103.30'L x 3.50'H Field A 3,977 cf Overall - 1,286 cf Embedded = 2,691 cf x 40.0% Voids
#2A	760.35'	1,286 cf	ADS_StormTech SC-740 +Cap x 28 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 14 Chambers
		2,363 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	759.85'	18.00" Round Culvert L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 759.85' / 759.22' S= 0.0209 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	759.85'	0.50" Vert. Orifice C= 0.600
#3	Device 1	760.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=9.16 cfs @ 12.06 hrs HW=762.46' TW=757.14' (Dynamic Tailwater)

↑ **1=Culvert** (Inlet Controls 9.16 cfs @ 5.18 fps)

↑ **2=Orifice** (Passes < 0.01 cfs potential flow)

↑ **3=Sharp-Crested Rectangular Weir** (Passes < 32.35 cfs potential flow)

Pond D: UG Detention - Chamber Wizard Field A**Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)**

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +12.0" End Stone x 2 = 103.30' Base Length

2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

28 Chambers x 45.9 cf = 1,286.3 cf Chamber Storage

3,976.9 cf Field - 1,286.3 cf Chambers = 2,690.6 cf Stone x 40.0% Voids = 1,076.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,362.6 cf = 0.054 af

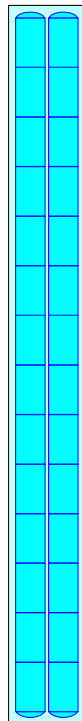
Overall Storage Efficiency = 59.4%

Overall System Size = 103.30' x 11.00' x 3.50'

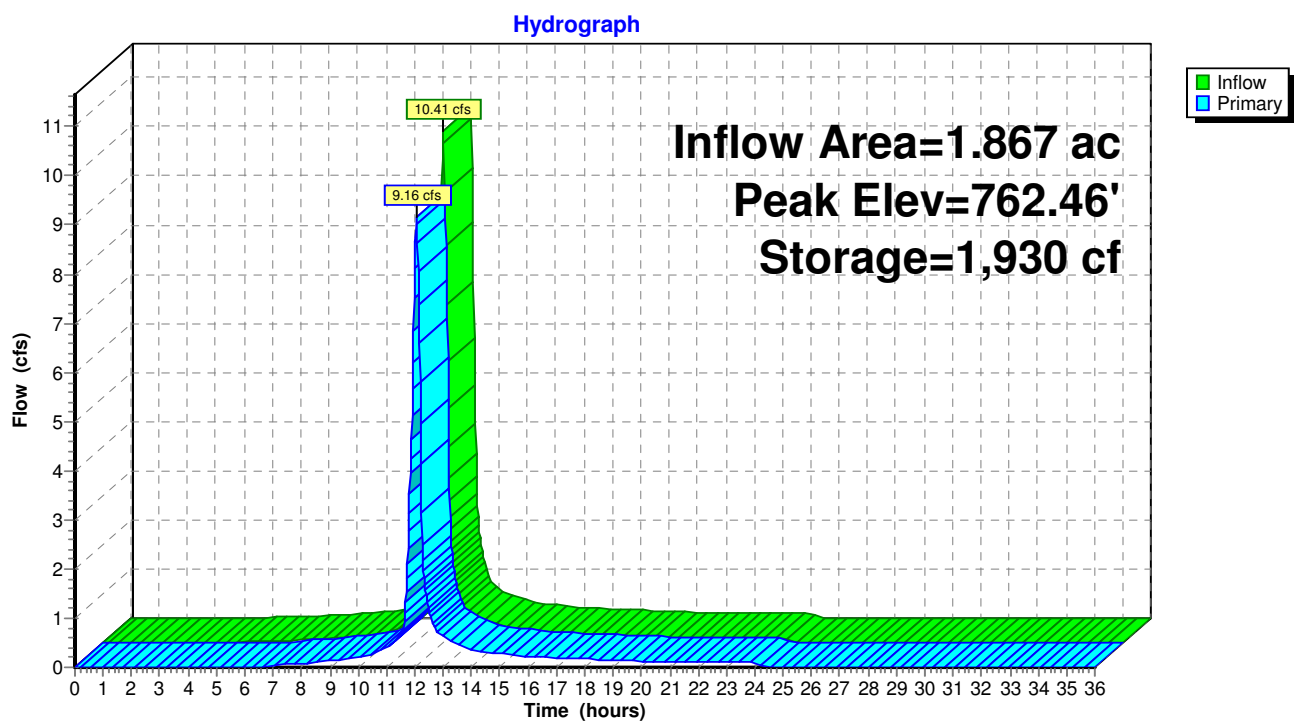
28 Chambers

147.3 cy Field

99.7 cy Stone



Pond D: UG Detention

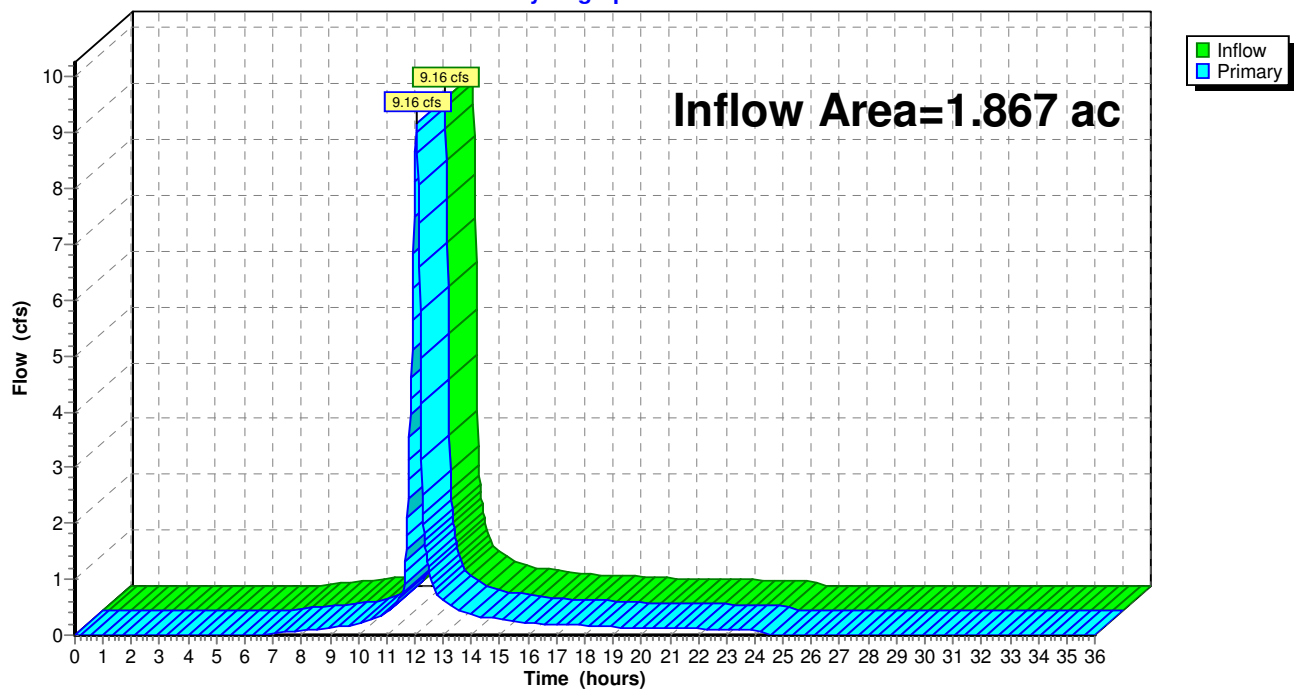


Summary for Link 4L: Dry Swale

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth > 3.81" for 50-year event
Inflow = 9.16 cfs @ 12.06 hrs, Volume= 0.593 af
Primary = 9.16 cfs @ 12.06 hrs, Volume= 0.593 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Fixed water surface Elevation= 757.14'

Link 4L: Dry Swale**Hydrograph**

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 44

Summary for Subcatchment E2: Offsite from Iannelli

Runoff = 1.55 cfs @ 12.01 hrs, Volume= 0.099 af, Depth= 5.68"

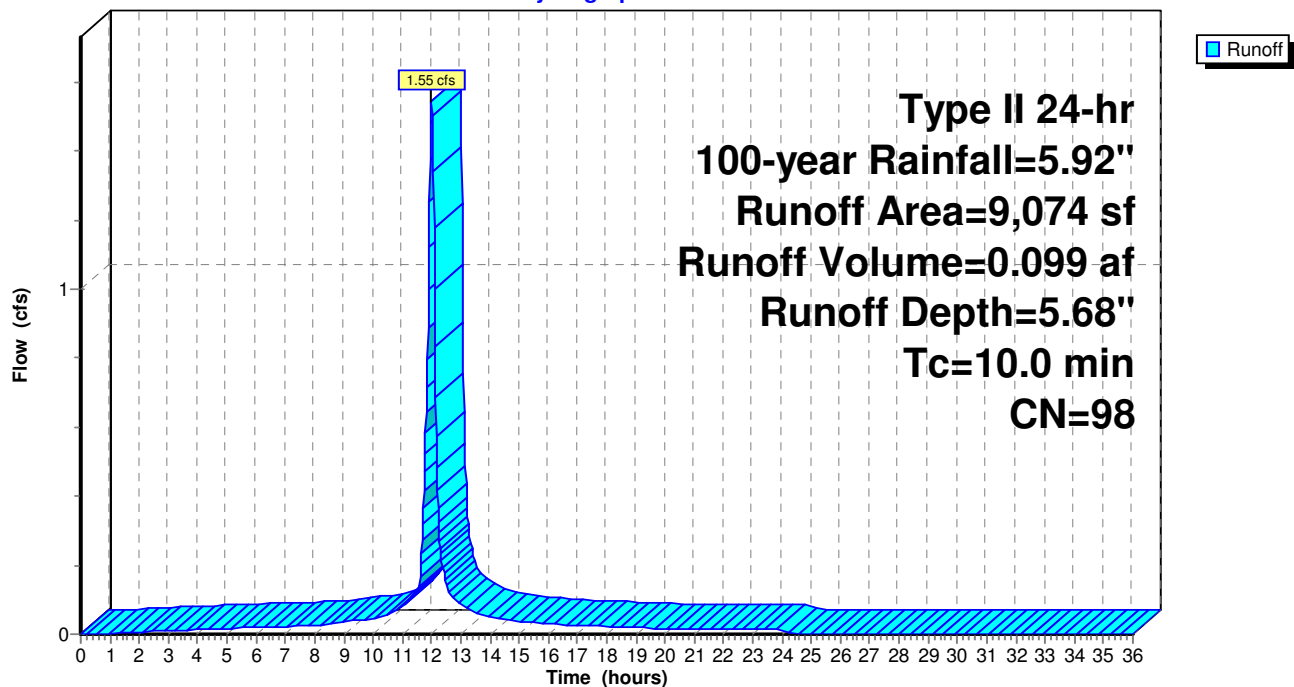
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

	Area (sf)	CN	Description
*	9,074	98	Paved parking, HSG A, C
	9,074		100.00% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E2: Offsite from Iannelli

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 45

Summary for Subcatchment E3: Offsite from McDonalds

Runoff = 0.05 cfs @ 12.03 hrs, Volume= 0.003 af, Depth= 1.55"

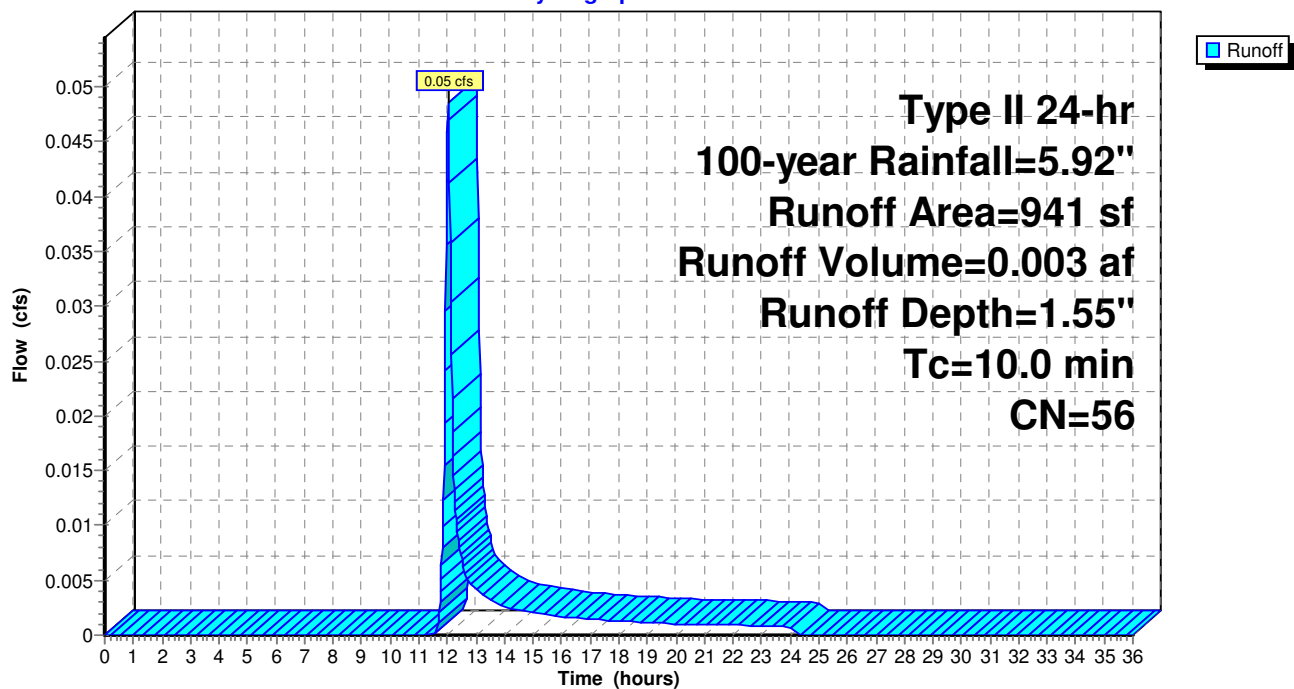
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

Area (sf)	CN	Description
462	74	>75% Grass cover, Good, HSG C
479	39	>75% Grass cover, Good, HSG A
941	56	Weighted Average
941		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment E3: Offsite from McDonalds

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 46

Summary for Subcatchment P1: Prop. Drainage Area

Runoff = 10.87 cfs @ 12.01 hrs, Volume= 0.621 af, Depth= 4.55"

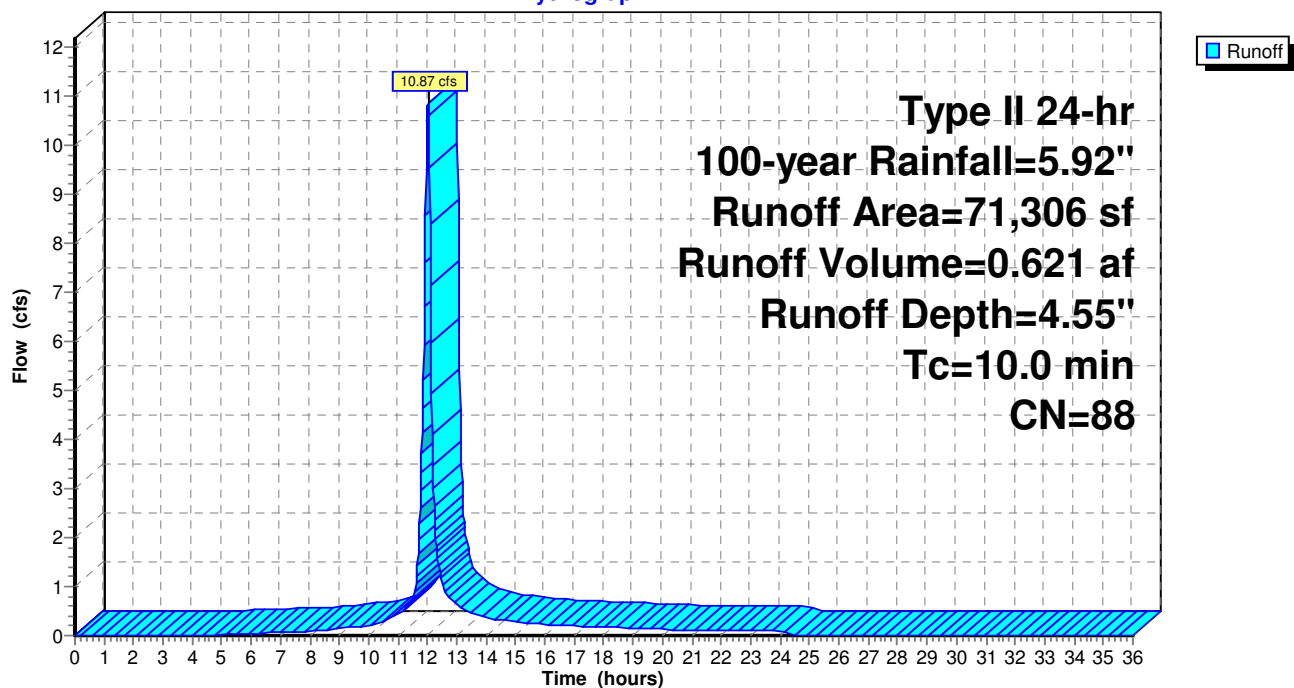
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Type II 24-hr 100-year Rainfall=5.92"

	Area (sf)	CN	Description
*	47,536	98	Paved parking & Rooftop, HSG A, D
	7,007	39	>75% Grass cover, Good, HSG A
	15,302	80	>75% Grass cover, Good, HSG D
	1,461	73	Brush, Good, HSG D
	71,306	88	Weighted Average
	23,770		33.34% Pervious Area
	47,536		66.66% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					Direct Entry,

Subcatchment P1: Prop. Drainage Area

Hydrograph



Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 47

Summary for Pond D: UG Detention

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth = 4.64" for 100-year event
Inflow = 12.46 cfs @ 12.01 hrs, Volume= 0.722 af
Outflow = 11.09 cfs @ 12.06 hrs, Volume= 0.718 af, Atten= 11%, Lag= 2.7 min
Primary = 11.09 cfs @ 12.06 hrs, Volume= 0.718 af

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs
Peak Elev= 763.33' @ 12.06 hrs Surf.Area= 1,136 sf Storage= 2,352 cf

Plug-Flow detention time= 18.7 min calculated for 0.718 af (99% of inflow)
Center-of-Mass det. time= 15.2 min (801.4 - 786.3)

Volume	Invert	Avail.Storage	Storage Description
#1A	759.85'	1,076 cf	11.00'W x 103.30'L x 3.50'H Field A 3,977 cf Overall - 1,286 cf Embedded = 2,691 cf x 40.0% Voids
#2A	760.35'	1,286 cf	ADS_StormTech SC-740 +Cap x 28 Inside #1 Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap 2 Rows of 14 Chambers
		2,363 cf	Total Available Storage

Storage Group A created with Chamber Wizard

Device	Routing	Invert	Outlet Devices
#1	Primary	759.85'	18.00" Round Culvert L= 30.1' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 759.85' / 759.22' S= 0.0209 '/' Cc= 0.900 n= 0.013 Corrugated PE, smooth interior, Flow Area= 1.77 sf
#2	Device 1	759.85'	0.50" Vert. Orifice C= 0.600
#3	Device 1	760.50'	4.0' long Sharp-Crested Rectangular Weir 2 End Contraction(s)

Primary OutFlow Max=11.07 cfs @ 12.06 hrs HW=763.32' TW=757.14' (Dynamic Tailwater)

1=Culvert (Inlet Controls 11.07 cfs @ 6.27 fps)

2=Orifice (Passes < 0.01 cfs potential flow)

3=Sharp-Crested Rectangular Weir (Passes < 53.12 cfs potential flow)

Culvers North Ridgeville

Prepared by Bramhall Engineering & Surveying Company

HydroCAD® 10.00-18 s/n 01586 © 2016 HydroCAD Software Solutions LLC

Type II 24-hr 100-year Rainfall=5.92"

Printed 9/12/2022

Page 48

Pond D: UG Detention - Chamber Wizard Field A

Chamber Model = ADS_StormTech SC-740 +Cap (ADS StormTech® SC-740 with cap length)

Effective Size= 44.6"W x 30.0"H => 6.45 sf x 7.12'L = 45.9 cf

Overall Size= 51.0"W x 30.0"H x 7.56'L with 0.44' Overlap

51.0" Wide + 6.0" Spacing = 57.0" C-C Row Spacing

14 Chambers/Row x 7.12' Long +0.81' Cap Length x 2 = 101.30' Row Length +12.0" End Stone x 2 = 103.30' Base Length

2 Rows x 51.0" Wide + 6.0" Spacing x 1 + 12.0" Side Stone x 2 = 11.00' Base Width

6.0" Base + 30.0" Chamber Height + 6.0" Cover = 3.50' Field Height

28 Chambers x 45.9 cf = 1,286.3 cf Chamber Storage

3,976.9 cf Field - 1,286.3 cf Chambers = 2,690.6 cf Stone x 40.0% Voids = 1,076.2 cf Stone Storage

Chamber Storage + Stone Storage = 2,362.6 cf = 0.054 af

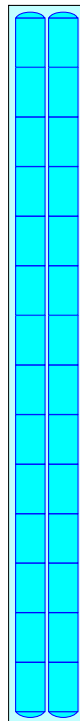
Overall Storage Efficiency = 59.4%

Overall System Size = 103.30' x 11.00' x 3.50'

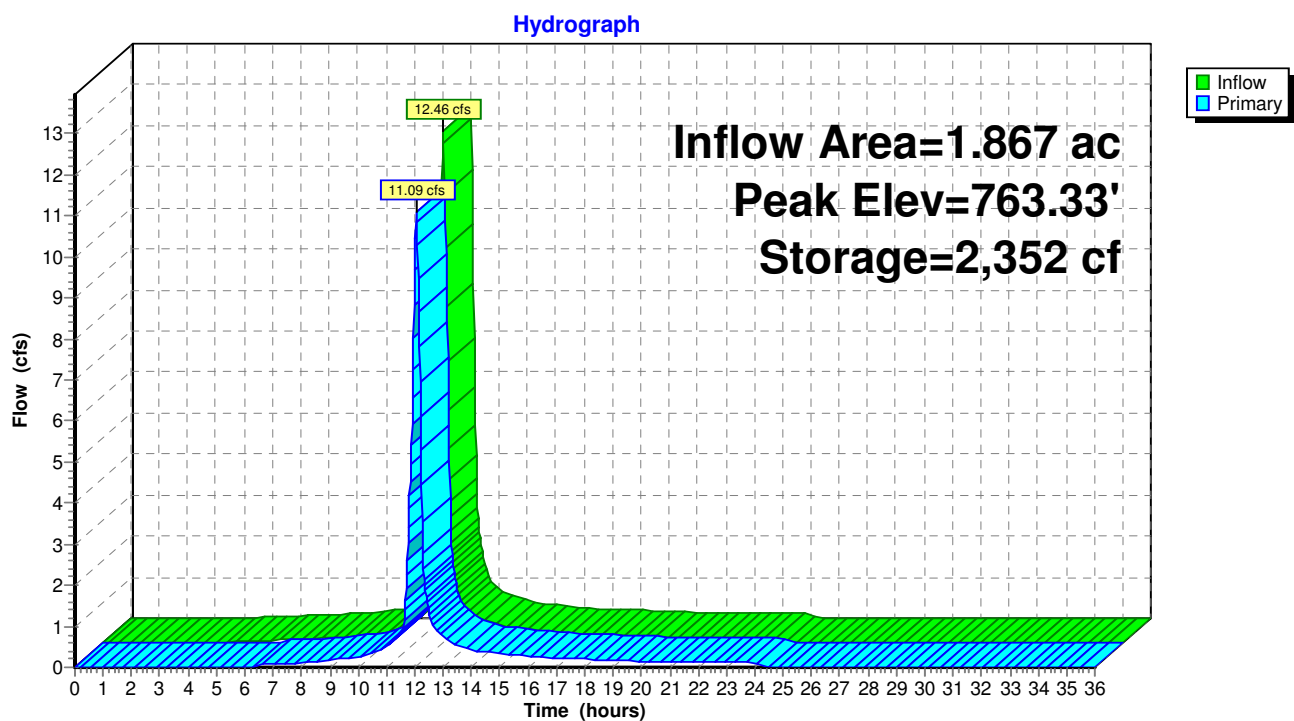
28 Chambers

147.3 cy Field

99.7 cy Stone



Pond D: UG Detention

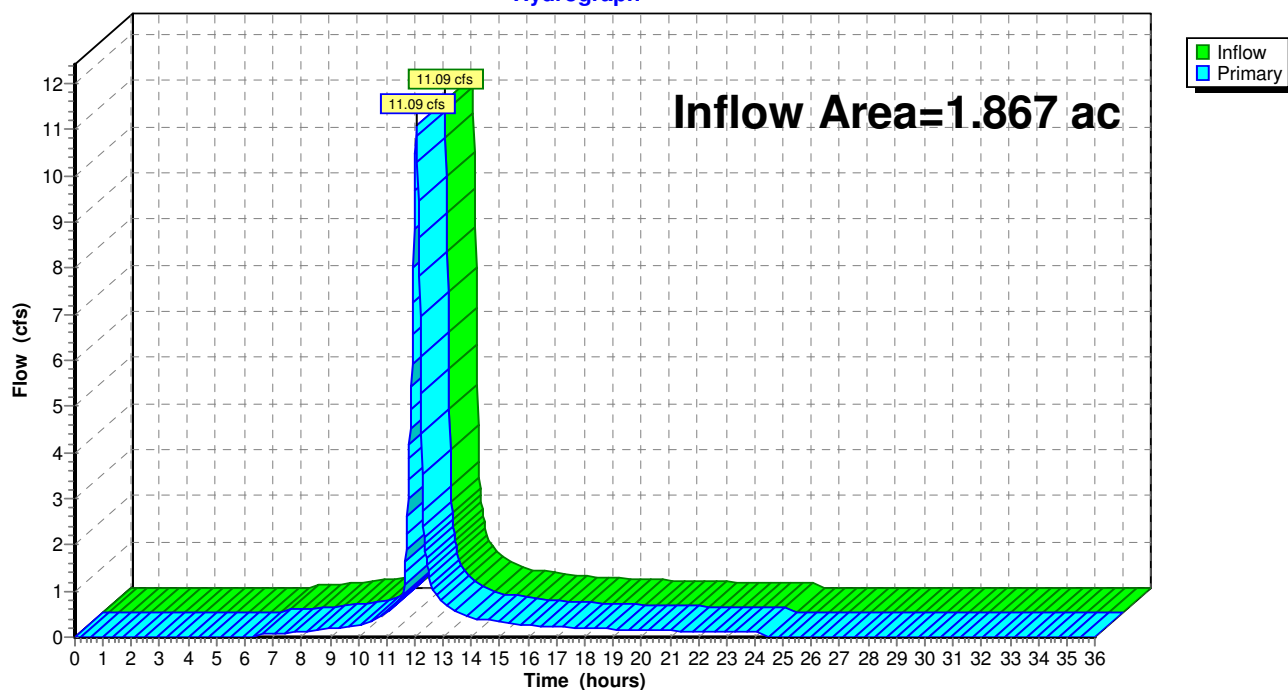


Summary for Link 4L: Dry Swale

Inflow Area = 1.867 ac, 69.61% Impervious, Inflow Depth > 4.62" for 100-year event
Inflow = 11.09 cfs @ 12.06 hrs, Volume= 0.718 af
Primary = 11.09 cfs @ 12.06 hrs, Volume= 0.718 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.02 hrs

Fixed water surface Elevation= 757.14'

Link 4L: Dry Swale**Hydrograph**

Appendix D

Underground Detention Calculations

Water Quality Calculations

Underground Detention System Detail Sheet

Underground Detention System Hydrographs (D)

Area and "C" Values for Storm Sewer Calculations

Area Name (Proposed)	Corresponding CDSS pipe run	Pave/Bldg Area, S.F.	(A*C), Pave/Bldg	Landscaping Area, (S.F.)	(A*C), Landscaping	Total Area, S.F.	Total Area, Ac.	Composite "C"
R1	LAT - CB4	4,393	4,173	0	0	4,393	0.10	0.95
A1	CB4 - CB5	11,664	11,081	5,480	2,740	17,144	0.39	0.81
A2	CB5 - NY1	6,070	5,767	1,290	645	7,360	0.17	0.87
A3	CB1 - CB2	5,783	5,494	667	334	6,450	0.15	0.90
A4	CB2 - CB3	10,959	10,411	4,651	2,326	15,610	0.36	0.82
A5	CB3 - UGD	8,868	8,425	2,769	1,385	11,637	0.27	0.84
OFF1	XCB1 - CB6	6,603	6,273	794	397	7,397	0.17	0.90
OFF2	CB6 - CB4	2,473	2,349	104	52	2,577	0.06	0.93
					Total Area	72,568	1.67	0.85
Pave/Bldg "C" Value			0.95		Grass/Landscaping "C" Value			0.50



STORM SEWER SYSTEM

PID : **Date :** 07/27/2022 **Project :** BESC#22-5800

Location : North Ridgeville, Ohio

Description :

Designer : Beres

Rainfall Area: A

Just Full Capacity Frequency (yrs.) : 10

Hydraulic Gradient Frequency (yrs.) : 25

Minimum Pipe Size : 0.00

Tailwater Elevation (ft.): 761.90

JUNCTION From	STATION To	From To	ΔAREA	ΔCA	BEGIN	RAINFALL		DISCHARGE		PIPE			F/L PIPE	MEAN	JUST FULL	FRICT	HYGR EL.	COVER	COVER	COVER	INLET TYPE
			Σ AREA (acres)	Σ CA	TIME (min.)	INTENSITY (10 yrs.)	(25 yrs.)	(10 yrs.)	(25 yrs.)	(cfs.)	DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	IN / OUT (ft.)	VEL (fps.)	CAPACITY (cfs.)	SLOPE (ft./ft.)	IN / OUT (ft.)	IN / OUT (ft.)	MINUS HY GR	MINUS CROWN
LAT	CB4		0.10 0.10	0.10 0.10	10.00	4.94	5.58	0.5	0.5	8	57.9	0.0136	765.00 764.21	3.86	1.64	0.0016	765.27 764.71	769.00 767.08	3.73 3.33	0.012	
XCB1	CB6		0.17 0.27	0.15 0.25	10.00	4.94	5.60	0.8	0.9	12	54.5	0.0394	765.80 763.65	6.23	8.24	0.0005	766.03 764.34	768.57 768.95	2.54 1.77	0.012	
CB6	CB4		0.06 0.33	0.06 0.30	10.15	4.91	5.59	1.0	1.2	12	7.6	0.0092	763.65 763.58	4.03	3.98	0.0009	764.31 764.31	768.95 767.08	4.64 4.30	0.012	
CB4	CB5		0.39 0.72	0.32 0.62	10.25	4.89	5.41	3.0	3.4	12	240.0	0.0100	763.58 761.18	5.45	4.15	0.0075	764.30 762.18	767.08 765.33	2.78 2.50	0.012	
CB5	NY1		0.17 0.89	0.15 0.77	10.98	4.76	5.41	3.7	4.2	12	21.4	0.0084	761.18 761.00	5.13	3.81	0.0116	762.18 761.93	765.33 760.35	3.15 3.15	0.012	



STORM SEWER SYSTEM

PID : **Date :** 07/27/2022 **Project :** BESC#22-5800

Location : North Ridgeville, Ohio

Description :

Designer : Beres

Rainfall Area: A

Just Full Capacity Frequency (yrs.) : 10

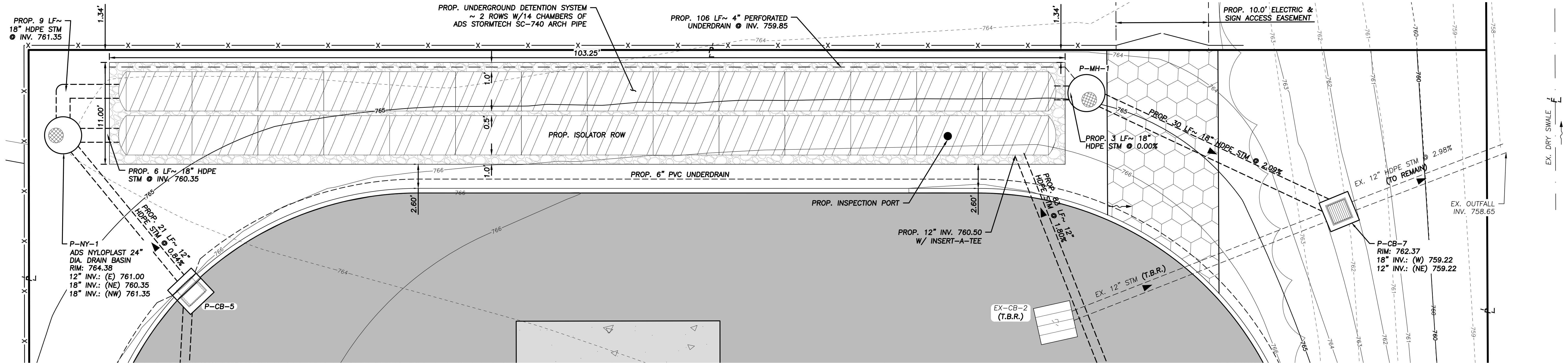
Hydraulic Gradient Frequency (yrs.) : 25

Minimum Pipe Size : 0.00

Tailwater Elevation (ft.): 761.90

JUNCTION From	STATION To	From To	Δ AREA	Δ CA	BEGIN	RAINFALL		DISCHARGE		PIPE			F/L PIPE	MEAN	JUST FULL	FRICT	HYGR EL.	COVER	COVER	COVER	INLET TYPE
			Σ AREA (acres)	Σ CA	TIME (min.)	(10 yrs.)	(25 yrs.)	(10 yrs.)	(25 yrs.)	DIAM. (in.)	LENGTH (ft.)	SLOPE (ft./ft.)	IN / OUT (ft.)	VEL (fps.)	CAPACITY (cfs.)	SLOPE (ft./ft.)	IN / OUT (ft.)	IN / OUT (ft.)	MINUS HY GR	MINUS CROWN	MANNING'S 'n'
CB1	CB2		0.15 0.15	0.14 0.14	10.00	4.94	5.56	0.7	0.8	12	90.2	0.0167	766.00 764.49	4.42	5.37	0.0004	766.26 765.17	768.75 766.50	2.49	1.75	0.012
CB2	CB3		0.36 0.51	0.30 0.43	10.34	4.88	5.42	2.1	2.3	12	176.3	0.0071	763.25 762.00	4.40	3.50	0.0036	763.88 762.83	766.50 765.33	2.62	2.25	0.012
CB3	UGD		0.27 0.78	0.23 0.66	11.01	4.75	5.38	3.1	3.5	12	83.2	0.0180	762.00 760.50	6.90	5.58	0.0084	762.61 761.90	765.33 766.60	2.73	2.33	0.012

Bramhall Engineering and Surveying Company
801 Moore Road
Avon, Ohio 44011
(440) 934-7878



Ohio EPA Storm Water Quality Calculator

Project Name:	Culver's North Ridgeville
Project Date:	Monday, August 29, 2022
Designed By:	Beres

Required Input Information		
Area (A) =	1.87	Acres
Perc. (P) =	0.90	Inches
Runoff Coeff. (C) =	0.85	Unitless
Drawdown Time (T) =	24.00	Hours
WQ _v depth (H) =	0.65	Feet

<= From Area and "C"
Values Chart

Water Quality Volume (WQ _v)		
WQ _v =	[P*A*(Rv ₁ *0.2)+(Rv ₂ -Rv ₁)]/12	
WQ _v =	-0.0027	Ac.-Ft.
WQ _v =	-116	Cu.-Ft.

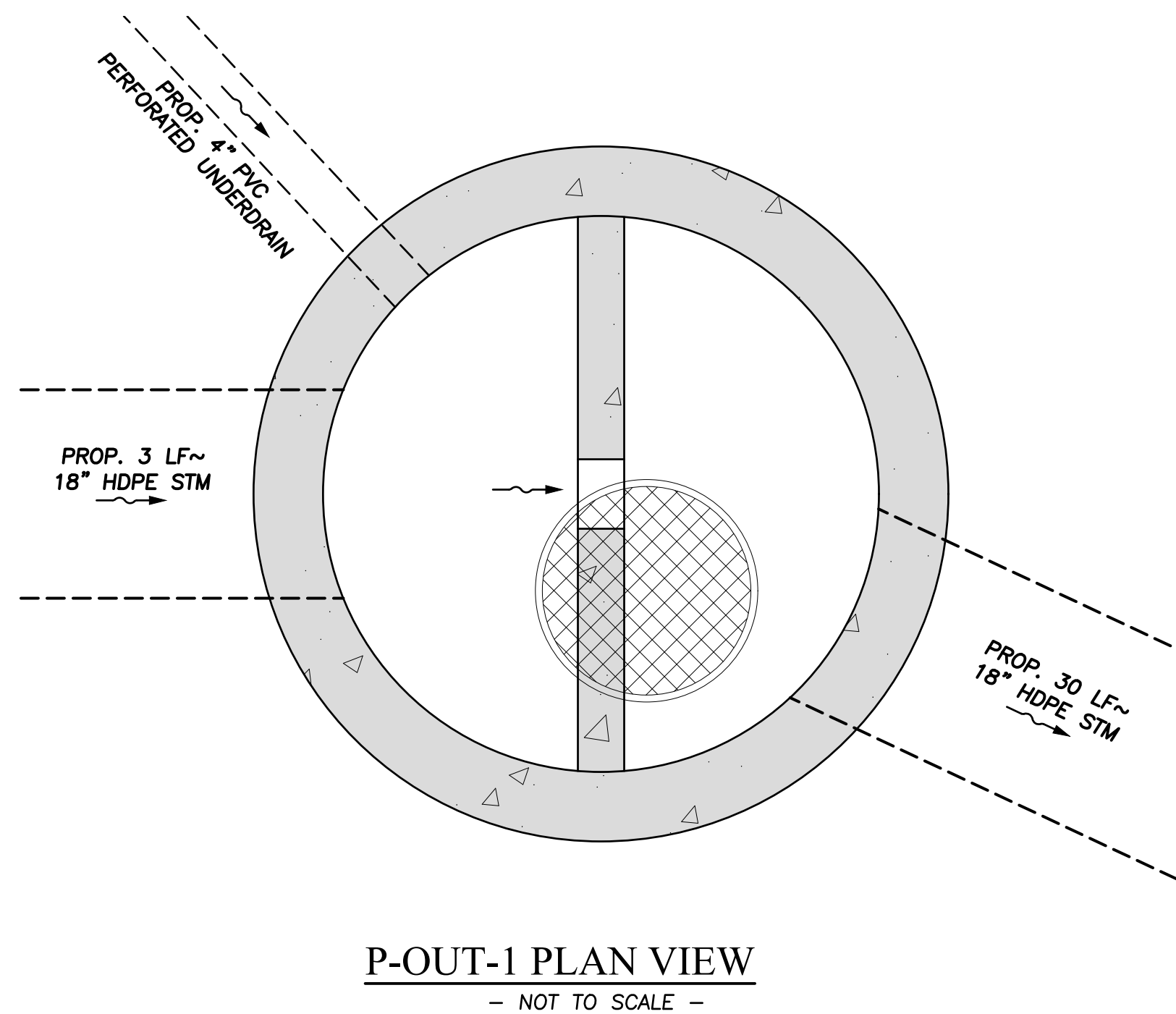
minimum target volume below bypass
<= connection to outlet structure

Sediment Storage Volume, SSV		
SSV =	20% WQ _v	
SSV =	-23	Cu.-Ft.

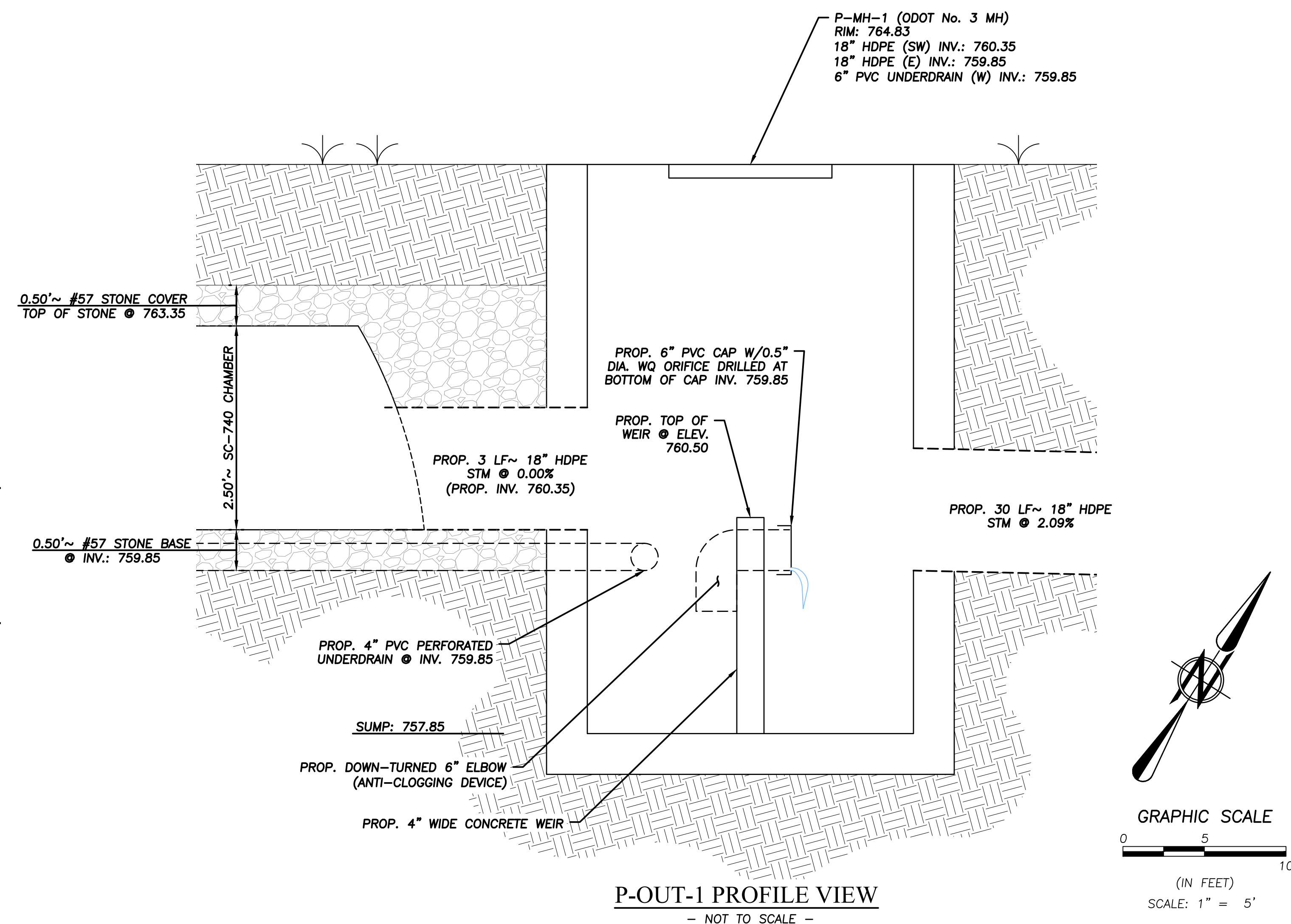
Min. Volume to Capture within Isolator Row		
Total =	WQ _v + SSV	
Total =	-140	Cu.-Ft.

Water Quality Flow (WQ _f) Isolator Row		
WQ _f =	[C * i * A]	
WQ _f =	2.35	cfs

Isolator Row:			
Flow Rate per Sq.-Ft.	1 gpm/sq-ft	=	0.0022 cfs/sq-ft
SC-740 Chamber Area	85"x51"	=	30.25 sq-ft
End Cap Area	12"x51"	=	4.3 sq-ft
Flow Rate per Chamber	0.07 cfs/chamber		
Chambers Provided	14.0		
Bypass Pipe Invert	761.35		
Volume Captured in Isolator row (below bypass)	743	c.f.	



P-OUT-1 PLAN VIEW
- NOT TO SCALE -



P-OUT-1 PROFILE VIEW
- NOT TO SCALE -

J:\25800 Culver's North Ridgeville\DRAWING\Improvement Plans\C3.2 UG Detention System.dwg, Plotted: Sep 13, 2022 - 7:45am

DATE:	BY:	DESCRIPTION:
9-13-2022	APA	ISSUE TO CITY ENGINEER & PLANNING COMMISSION

DRAWN BY:
REB

CHECKED BY:
APA



PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
UNDERGROUND DETENTION SYSTEM
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

SHEET
C3.2
JOB NO.
22-5800

J:\225800 Culver's North Ridgeville\DRAWING\Improvement Plans\C3.0 Utility Plan.dwg, Plotted: Sep 13, 2022 - 7:45am

EXISTING UNDERGROUND UTILITIES NOTE:
THE SIZE & LOCATION, BOTH HORIZONTAL AND VERTICAL, OF THE UNDERGROUND UTILITIES SHOWN HEREON, HAVE BEEN OBTAINED BY A SEARCH OF AVAILABLE RECORDS. VERIFICATION BY FIELD OBSERVATION HAS BEEN CONDUCTED WHERE PRACTICAL. HOWEVER, BRAMHALL ENGINEERING AND SURVEYING COMPANY, DOES NOT GUARANTEE THE COMPLETENESS NOR ACCURACY THEREOF.

OHIO UTILITIES PROTECTION SERVICE		UNDERGROUND UTILITIES
BEFORE YOU DIG ANYWHERE IN OHIO! CALL 1-800-362-2764 OR 8-1-1 (TOLL FREE) OHIO LAW REQUIRES 48 HOURS BUT NO MORE THAN 10 WORKING DAYS NOTICE TO UTILITIES BEFORE YOU EXCAVATE, DRILL, BLAST OR DEMOLISH (NON MEMBERS MUST BE CALLED DIRECTLY) WWW.CUPS.ORG		Contact Two Working Days Before You Dig OHIO811.org Before You Dig OHIO811, 8-1-1, or 1-800-362-2764 (Non-members must be called directly)

DATE	BY	DESCRIPTION
7-1-2022	APA	PRELIMINARY ISSUE FOR REVIEW
8-19-2022	APA	ISSUE TO CITY FOR REVIEW
8-31-2022	APA	ISSUE TO SPRINGFIELD SIGN
9-13-2022	APA	ISSUE TO CITY ENGINEER & PLANNING COMMISSION

STRUCTURE TYPES:

- (A) 2'x3' CURB INLET
- (B) ADS 24"x24" NYLOPLAST STRUCTURE
- (C) STORM CLEANOUT
- (D) SANITARY MONITORING MANHOLE
- (E) ODOT 2-2B CATCH BASIN W/ EJIW 5250 FRAME & GRATE
- (F) ODOT 2-2B CATCH BASIN W/EJIW 5100 GRATE
- (G) ODOT No.3 MANHOLE WITH INTERNAL WEIR (SEE SHEET C3.2 FOR DETAIL ON WINDOWS IN WEIR)

DRAWN BY:
REB

CHECKED BY:
APA

BRAMHALL
ENGINEERING AND SURVEYING COMPANY
801 MOORE ROAD AVON, OHIO 44011
(440) 934 - 7878 (440) 934 - 7879 FAX

PREPARED FOR:

216 DIRT HOLDINGS, LLC
P.O. BOX 591
RHINELANDER, WI 54501

CULVER'S RESTAURANT IMPROVEMENTS
UTILITY PLAN
CITY OF NORTH RIDGEVILLE, COUNTY OF LORAIN,
STATE OF OHIO

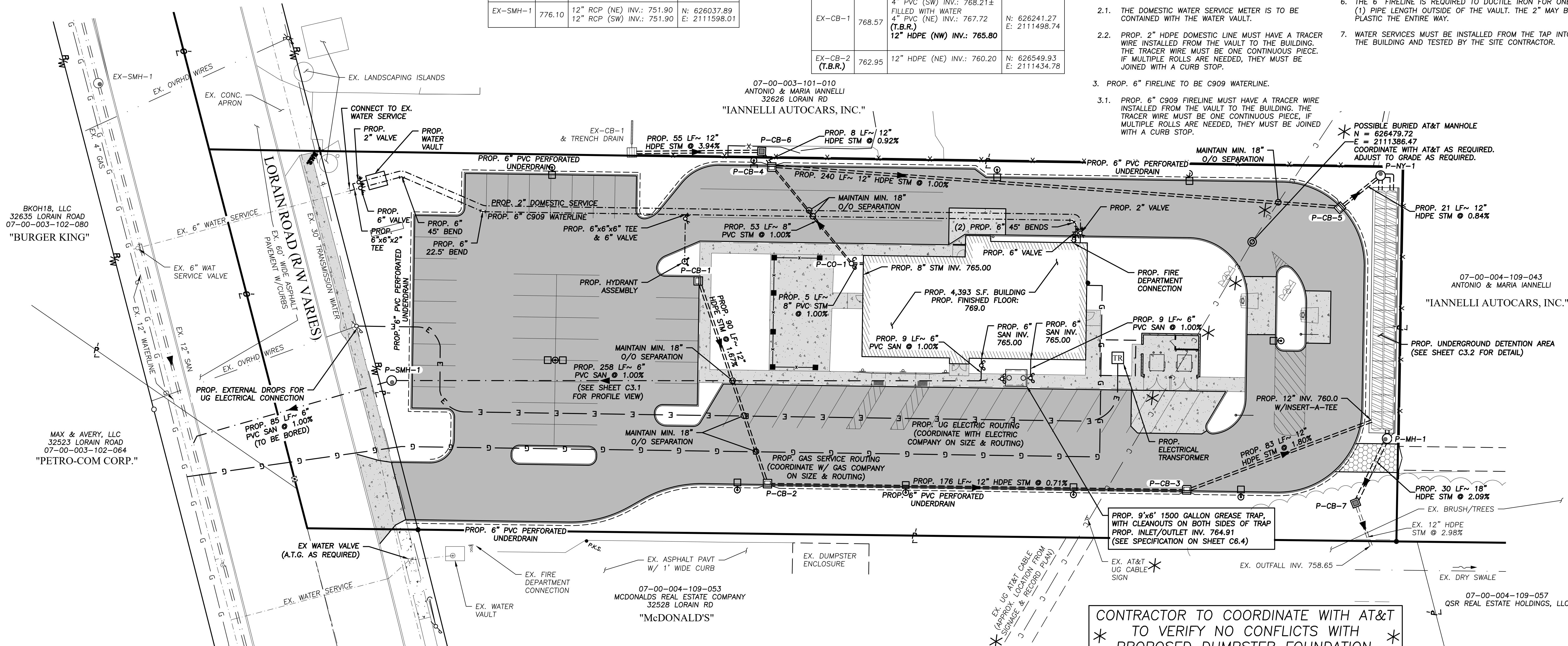
SHEET
C3.0
JOB NO.
22-5800

EXISTING SANITARY STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
EX-SMH-1	776.10	12" RCP (NE) INV.: 751.90 12" RCP (SW) INV.: 751.90	N: 626037.89 E: 2111598.01

EXISTING STORM STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
EX-CB-1	768.57	4" PVC (SW) INV.: 768.21± FILLED WITH WATER 4" PVC (NE) INV.: 767.72 (T.B.R.) 12" HDPE (NW) INV.: 765.80	N: 626241.27 E: 2111498.74
EX-CB-2 (T.B.R.)	762.95	12" HDPE (NE) INV.: 760.20	N: 626549.93 E: 2111434.78

UTILITY NOTES:

1. MAINTAIN A MINIMUM 18" VERTICAL SEPARATION AT ALL UTILITY CROSSINGS, OUTER DIAMETER TO OUTER DIAMETER (O/O).
2. PROP. 2" DOMESTIC SERVICE TO BE HDPE PE3408, C-3, SDR-9 PC200@73F, ASTM D2737-05 AWWA C-901.
 - 2.1. THE DOMESTIC WATER SERVICE METER IS TO BE CONTAINED WITH THE WATER VAULT.
 - 2.2. PROP. 2" HDPE DOMESTIC LINE MUST HAVE A TRACER WIRE INSTALLED FROM THE VAULT TO THE BUILDING. THE TRACER WIRE MUST BE ONE CONTINUOUS PIECE. IF MULTIPLE ROLLS ARE NEEDED, THEY MUST BE JOINED WITH A CURB STOP.
3. PROP. 6" FIRELINE TO BE C909 WATERLINE.
 - 3.1. PROP. 6" C909 FIRELINE MUST HAVE A TRACER WIRE INSTALLED FROM THE VAULT TO THE BUILDING. THE TRACER WIRE MUST BE ONE CONTINUOUS PIECE, IF MULTIPLE ROLLS ARE NEEDED, THEY MUST BE JOINED WITH A CURB STOP.
4. WATER LINES SHALL HAVE JOINT RESTRAINTS 2 JOINTS BEFORE AND AFTER ANY FITTINGS.
5. THE 6" FIRELINE BETWEEN THE BUILDING AND THE NEAREST VALVE MUST BE DUCTILE IRON CLASS 52.
6. THE 6" FIRELINE IS REQUIRED TO DUCTILE IRON FOR ONE (1) PIPE LENGTH OUTSIDE OF THE VAULT. THE 2" MAY BE PLASTIC THE ENTIRE WAY.
7. WATER SERVICES MUST BE INSTALLED FROM THE TAP INTO THE BUILDING AND TESTED BY THE SITE CONTRACTOR.



PROPOSED SANITARY STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
P-SMH-1 (D)	775.60	6" PVC (SE) INV.: 762.22 6" PVC (NW) INV.: 762.32	N: 626209.75 E: 2111634.48

PROPOSED STORM STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
P-CB-1 (A)	768.75	12" HDPE (NE) INV.: 766.00	N: 626294.69 E: 2111528.35
P-CB-2 (A)	766.50	12" HDPE (NW) INV.: 763.25 12" HDPE (SW) INV.: 764.49 6" PVC (SE) INV.: 763.50 6" PVC (N) INV.: 763.50	N: 626365.72 E: 2111584.00
P-CB-3 (A)	765.33	12" HDPE (SE) INV.: 762.00 12" HDPE (NW) INV.: 762.00 6" PVC (SE) INV.: 762.33 6" PVC (N) INV.: 762.33	N: 626514.34 E: 2111489.09
P-CB-4 (A)	767.08	6" PVC (S) INV.: 764.08 12" HDPE (NW) INV.: 763.58 6" PVC (NW) INV.: 764.08 8" PVC (N) INV.: 764.42 12" HDPE (S) INV.: 763.58	N: 626293.60 E: 2111471.07

PROPOSED STORM STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
P-CB-5 (A)	765.33	12" HDPE (SE) INV.: 761.18 12" HDPE (W) INV.: 761.18 6" PVC (SW) INV.: 762.33 6" PVC (N) INV.: 762.33	N: 626502.83 E: 2111353.79
P-CB-6 (E)	768.95	12" HDPE (SE) INV.: 763.65 12" HDPE (N) INV.: 763.65	N: 626286.52 E: 2111468.28
P-CB-7 (F)	762.37	18" HDPE (W) INV.: 759.22 12" HDPE (NE) INV.: 759.22	N: 626576.50 E: 2111454.20
P-CO-1 (C)	768.75	8" PVC (S) INV.: 764.95 8" PVC (NW) INV.: 764.95	N: 626344.06 E: 2111486.89

PROPOSED STORM STRUCTURE TABLE			
NAME	RIM	INVERT(S)	LOCATION
P-MH-1 (G)	764.83	18" HDPE (SW) INV.: 760.35 18" HDPE (E) INV.: 759.85 6" PVC (W) INV.: 759.85	N: 626572.65 E: 2111424.30
P-NY-1 (E)	764.38	12" HDPE (E) INV.: 761.00 18" HDPE (NE) INV.: 760.35 18" HDPE (NW) INV.: 761.35	N: 626509.46 E: 2111333.46

HATCH LEGEND

- PROPOSED ASPHALT PAVEMENT
- PROPOSED CONCRETE
- PROPOSED GRID HD/2.0 OR APPROVED EQUAL

GRAPHIC SCALE
0 20 40
(IN FEET)
SCALE: 1" = 20'

STAFF MEETING BULLETIN

Meeting Date: August 31, 2022

Proposed Project: 07-00-003-101-010, 07-00-004-109-043, 32574 Lorain Road, North Ridgeville, OH 44039

Applicant: Joshua Clark, 216 Dirt Holdings, LLC, P.O. Box 591, Rhinelander, WI 54501

Zoning: B-4 Commercial Parkway District

In Attendance: Kevin Corcoran, Mayor
Jeff Armbruster, Safety Service Director
Kimberly Lieber, Planning and Economic Development Director
Guy Fursdon, Chief Building Official
Christina Eavenson, Assistant City Engineer
Toni Morgan, Assistant Law Director
Mike Uhnak, Assistant Fire Chief
Tina Wieber, Deputy Clerk of Council
Aaron P. Appell, Bramhall Engineering and Surveying Company
Doug Lehar, Culver's Owner/Operator

Project Introduction

- The Mayor asked the applicant to introduce the project. Aaron explained that they were proposing a lot split to create a 1.7431 acre lot and construct a 4,393 square foot single story Culver's restaurant with 58 parking spaces. He described the business as fast casual made-to-order with call ahead and mobile ordering. He stated that there would be a double drive-thru with 10 waiting spaces where the food would be brought out to the cars. He mentioned that the turn-around time would be 5 to 6 minutes unless there was a rush and then it may be 10 to 12 minutes. He explained that there was plenty of space so that there would not be traffic backing onto Lorain Road. He stated that there would be standard lighting and a black metal decorative fence along the back of the property line and they would add an additional fence to keep the sites separate. He explained that the sanitary would run under Lorain Rd and the site's water management would have underground storage on the north east of the site. He stated they would have an on-site dumpster and a patio with a few tables. He added that they would have an island sign probably 40 feet tall.

Staff Comments

- Kim asked that they provide detail of the fence along the rear as well as submit a cut sheet.
- Guy asked for sign information and stated he wasn't aware of a sign in the back of the business. Doug stated that they would get ahold of the company they use for their signage.
- Mike asked about the turn study and how much back flow during their busiest time of day on the northwest corner. Aaron stated there was a 14 foot bypass lane that was unobstructed.
- Christine asked about the storm water management outfall swell elevations. Aaron stated that it would go through parcel to parcel. He stated they would take a look at the overall flow to get a reduction from a company they use.
- Mike explained that when they do their hydraulic calculation that NRPD would witness it. And asked that they included their approval from the Lorain County Health Department with their plans.

Next Steps

The applicant will submit updated plans by September 13, 2022 to be distributed to Planning Commission members for the September 13, 2022 meeting



PROPOSED CHARTER AMENDMENTS

The North Ridgeville Charter was first adopted in 1961. It is the legal framework through which our City exercises its powers of self-government.

A Charter Review Committee, consisting of nine North Ridgeville residents, convened earlier this year for the purpose of conducting a review of the Charter and presenting alterations, revisions and amendments they deemed advisable. As a result of their work, on November 8, North Ridgeville voters will be asked to consider eight changes to the Charter.

Before casting your vote, learn more about these eight ballot issues and why the Charter Review Committee felt these amendments are important for the community.

CHARTER REVIEW COMMITTEE

Sara Markle, Chair
Bob Chapek
Dawn Fitz

Rachele Glynias
J.D. Gontkovsky
Bob Meeker

Sarah Miller
Frank Toth
Ken Wilson

Issue 29

Shall a new Department of Finance be created by amending Article IV, The Auditor, and repealing Article VI, The Treasurer, of the City of North Ridgeville Charter?

This amendment would combine the duties and responsibilities of the City's current Auditor's office and Treasurer's office into a single Department of Finance. The benefits of such a merger would be to streamline administrative services, create efficiencies, alleviate the challenges associated with overlapping responsibilities and bring cohesiveness to the City's finance team.

Issue 30

Shall Section 9.7 of Article IX of the Charter of the City of North Ridgeville be amended by deleting an unworkable mathematical formula, and mandating referral to the electorate of any rezoning to any Multiple Family Residence District?

Currently, the Charter contains a mathematical formula to determine when property can be considered for rezoning to any multi-family residential use. This formula is subject to conflicting interpretations and is unworkable in application; therefore, it is recommended to be deleted. With this amendment, any proposed rezoning to Multiple Family Residence District will continue to be subject to mandatory referral and require approval by the voters. Mixed use zoning, involving a combination of residential and non-residential uses, would be able to be legislatively approved by Council. This amendment would allow the City to pursue creation of a "town center" concept with a mix of retail, restaurants, offices and apartments.

Issue 31

Shall Article III of the Charter of the City of North Ridgeville be amended by adding a new Section 3.18 allowing City Council to make provisions by ordinance for the sale, lease, or disposal of municipal real estate and improvements?

Currently, the Charter has no rules governing the sale or lease of City-owned real estate. In the absence of local provisions, the City must follow the requirements outlined in the Ohio Revised Code. By developing our own procedures for the sale or lease of municipal real estate, the City would gain greater control over future development of its land, helping to ensure it's used in the best interests of the North Ridgeville community.

Issue 32

Shall Section 3.8 of Article III of the Charter of the City of North Ridgeville be amended by prohibiting the Clerk of Council from acting as Auditor and creating a chain of command in the Clerk's absence?

Currently, the Charter allows for the Clerk of Council to also serve as the Auditor, who is the City's chief financial officer. The duties of Clerk of Council and Auditor, and the skills required for these positions, are vastly different. This amendment would strike out the language allowing the Clerk of Council to serve as Auditor. Additionally, the amendment would establish a clear chain of command for the Clerk of Council's office when the Clerk of Council is absent, unable to perform his/her duties or in cases where the position is temporarily vacant.

Issue 33

Shall Section 10.3 of Article X of the Charter of the City of North Ridgeville be amended to clarify which employees are classified and unclassified and to comply with State law?

The Charter categorizes all city employees into either the classified or unclassified service. Civil service is an area governed and regulated by the State of Ohio. This amendment would make clarifications regarding these categories in order to comply with State law.

Issue 34

Shall Section 3.5 of Article III of the Charter of the City of North Ridgeville be amended to allow appointed members of Council be elected as Council President?

Currently, when there is a vacancy in the office of the President of Council, only Council members elected by the people can be considered to fill the position. This amendment would allow for a Council member who was not elected, but appointed to fill a Council vacancy, to also be considered for Council President.

Issue 35

Shall Section 3.16 of Article III of the Charter of the City of North Ridgeville be amended to maintain electronic media as a form of publication and eliminate the mandated use of the lobby bulletin board?

This amendment would remove the requirement that Council's resolutions, ordinances, meeting notices, reports, etc., be physically posted on a bulletin board in the lobby of City Hall. All required notices would continue to be publicly accessible through electronic media (website, email, etc.). The intent of the change is to ensure adequate public notice while eliminating an outdated form of communication.

Issue 36

Shall Section 9.1 of Article IX of the Charter of the City of North Ridgeville be amended to maintain electronic media as a form of publication and eliminate the mandated use of the lobby bulletin board?

This amendment would remove the requirement that public hearing notices for building and zoning ordinances be physically posted on a bulletin board in the lobby of City Hall. All required notices would continue to be published in the newspaper, directly mailed to property owners in the vicinity of any proposed rezoning and/or made publicly accessible through electronic media (website, email, etc.), as required in the Charter. The intent of the change is to ensure adequate public notice while eliminating an outdated form of communication.

DATE:	_____	1 ST READING:	_____
INTRODUCED BY:	_____	2 ND READING:	_____
REFERRED BY:	_____	3 RD READING:	_____
TEMPORARY NO:	T _____	ADOPTED:	_____
		EMERGENCY:	_____

ORDINANCE NO. XXXX-2022

AN ORDINANCE AMENDING SECTIONS 1266.04 AND 1268.04 OF THE NORTH RIDGEVILLE ZONING CODE TO UPDATE LOT AND YARD REQUIREMENTS.

WHEREAS, this Council has established lot and yard requirements which govern lot area and the placement of uses in the B-2 Central Business District and the B-3 Highway Commercial District; and

WHEREAS, zoning regulations are amended from time to time to ensure orderly development, provide consistency and eliminate conflicts with other requirements of the Zoning Code; and

WHEREAS, following publication of newspaper notice in conformance with the provisions of Section 9.1 of the Charter and Section 1246.03(d) of the Zoning Code, a public hearing was held on the ____ day of _____ 2022; and

WHEREAS, it is the desire of this Council and upon the recommendation of the North Ridgeville Planning Commission, to amend these Codified Ordinances.

NOW THEREFORE, BE IT ORDAINED BY THE COUNCIL OF THE CITY OF NORTH RIDGEVILLE, LORAIN COUNTY, OHIO:

SECTION 1. That *Section 1266.04 Lot and Yard Requirements* of the Zoning Code be amended as follows:

1266.04 LOT AND YARD REQUIREMENTS.

In a B-2 Central Business District, lot and yard requirements shall be as follows:

(a) Lot Area and Width.

(1) No minimum lot area shall be required ~~for nonresidential purposes~~; however, no lot may be less than ninety feet in width.

(2) ~~Where residential uses are permitted, the lot area and width requirements shall meet the requirements of an R-2 Multiple Residence District.~~

(b) Required Yards. Yards of the following depths or widths shall be provided for all permitted uses in a B-2 District, unless otherwise permitted by this Zoning Code:

(1) Front yards. The depth of the front yard shall not be less than fifty feet.

(2) Rear yards. The depth of the rear yard shall not be less than fifty feet.

(3) Side yards. There shall be no side yard requirements for lots in a B-2 District, except as otherwise provided herein:

- A. ~~When a use in a B-2 District adjoins any residential district, a side yard shall be provided on such adjoining side of not less than one-half the height of the building but not less than twenty feet in any case, with a natural landscaped buffer no less than ten feet wide and a five foot fence when required by the Planning Commission.~~
Where any side lot line adjoins a residential district, the side yard adjacent to that lot line shall be not less than twenty feet.
- B. A side yard shall be provided for a corner lot equal to the depth of the front yard requirements of the side street.
- C. ~~Yard requirements for residential uses in a B-2 District shall be such as the Planning Commission may require, and in no case shall it be less than required in an R-2 Multiple Residence District.~~

SECTION 2. That *Section 1268.04 Lot and Yard Requirements* of the Zoning Code be amended as follows:

1268.04 LOT AND YARD REQUIREMENTS.

- (a) Required Lot Area and Width. Each building, use or structure permitted in a B-3 Highway Commercial District shall be located on a lot having an area of not less than one acre and a width of not less than 150 feet, unless otherwise permitted by this Zoning Code.
- (b) Required Yards. Yards of the following widths or depths shall be provided for all permitted uses, unless otherwise permitted by this Zoning Code:
- (1) Front yards. The depth of the front yard shall be not less than fifty feet. Within this front yard and adjacent to the street right of way line, there shall be an open and unobstructed buffer strip of ten feet in depth. Parking of vehicles in this buffer strip shall be prohibited. Except for accessways permitted below, such buffer strip shall contain a curb or other suitable barrier against unchanneled motor vehicle ingress and egress and shall be continuous for the entire width of the lot adjoining the street or highway right of way line.
- A. Where a kennel is located on the premises, the depth of the front yard shall be not less than 150 feet, measured from the right-of-way line of the road. ~~Conditional management living quarters are permitted.~~
- B. (EDITOR'S NOTE: Former subsection (b)(1)B was repealed by Ordinance 4776-2010, passed September 7, 2010.)
- (2) Rear yards. The depth of the rear yard shall be not less than forty feet.
- (3) Side yards.
- A. There shall be two side yards for each lot in a B-3 District, the sum of which shall be not less than thirty-five feet, and each side yard shall be not less than fifteen feet, except as otherwise provided in this Zoning Code. **Where any side lot line adjoins a residential district, the side yard adjacent to that lot line shall be not less than twenty feet.**
- B. ~~For each lot in a B-3 District which abuts any residential district, the sum of the two side yards shall be not less than fifty feet, and each side yard shall be not less than twenty-five feet.~~
- (4) ~~Buffer strips. Buffer strips shall be provided as required in Section 1266.04(b)(3)A.~~

SECTION 3. That, in all other respects, the North Ridgeville Zoning Code, as amended from time to time, shall remain in full force and effect.

SECTION 4. That it is found and determined that all formal actions of this Council concerning and relating to the adoption of this Ordinance were conducted in an open meeting of this Council, and that all deliberations of this Council and any of its committees that resulted in such formal action were in meetings open to the public in accordance with all legal requirements, including §121.22 of the Ohio Revised Code.

SECTION 5. That this Ordinance shall take effect and be in full force from and after the earliest period allowed by law.

PASSED: _____

PRESIDENT OF COUNCIL

ATTEST: _____
CLERK OF COUNCIL

APPROVED: _____

MAYOR