

ACME TOWNSHIP PLANNING COMMISSION MEETING ACME TOWNSHIP HALL 6042 Acme Road, Williamsburg MI 49690 March 9, 2015, 7:00 p.m.

CALL TO ORDER WITH PLEDGE OF ALLEGIANCE AT 7:00pm

Present:D. Rosa, J. DeMarsh, M. Timmins, B. Ballentine (Finch), D. White, S. Feringa, K. Wentzloff, T.ForgetteM. BinkleyStaff Present:N. Lennox, Zoning Administrator, J. Iacoangeli, Planner, J. Jocks, Legal CounselRecorder:T. Forgette

A. LIMITED PUBLIC COMMENT: None

B. APPROVAL OF AGENDA:

Motion by Timmins to approve agenda as presented; support by Balentine. Motion carried.

C. INQUIRY AS TO CONFLICTS OF INTEREST:

Feringa brought up for review and discussion the proposed GT Resort & Spa parking lot expansion that is on agenda. He was not planning to state a conflict of interest but would defer to legal counsel and the Planning Commision. The GT Resort is a separate business entity owned and operated by the Grand Traverse Band of Ottawa and Chippewa Indians. Though he is a tribal member, tribal members do not receive direct or indirect financial contributions from the GT Resort. He does work on projects at the GT Resort as part of normal duties as a corporate architect but has not worked on this particular project. J. Jocks reviewed policy and does not see an issue with bias. S. Feringa stated he would not recuse himself.

D. CONSENT CALENDAR: The purpose is to expedite business by grouping non-controversial items together for one Board motion without discussion. A request to remove any item for discussion later in the agenda from any member of the Board, staff or public shall be granted.

a) **RECEIVE AND FILE:**

1. Draft Unapproved Minutes of:

- **1.** Township Board minutes 02/03/15
- 2. Zoning Admin. monthly report: Jan-Feb 2015
- **3.** Bayshore Corridor Strategy meeting 2/24/15 Notes
- b) ACTION:

1. Draft Unapproved Minutes of:

1. Planning Commission minutes: 02/09/2015

E. ITEMS REMOVED FROM THE CONSENT CALENDAR:

Motion by White to to approve the consent calendar as presented; support by Timmins. Motion carried.

F. CORRESPONDENCE: K. Wentzloff introduced into record a letter from Robert Garvey of Deepwater Point dated February 13, 2015 regarding the proposed plans for the Traverse Bay RV Park expansion and the potential impacts on Yuba Creek. Copy is available with the minutes.

G. **PUBLIC HEARINGS:** None

H. NEW BUSINESS:

a) Grand Traverse Resort & Spa employee parking lot improvement site plan review

Ken Ockert of RCA, a representative of Grand Traverse Resort & Spa, presented the project. The proposed project involves the expansion of the current gravel 138 car employee parking lot to a paved parking If you are planning to attend and are physically challenged, requiring any special assistance, please notify Cathy Dye, Clerk, within 24 hours of the meeting at 938-1350.

lot that will accommodate 254 cars and up to 6 buses.

J. Iacoangeli provided a summary of the staff site plan review. Agency reviews were submitted and reviewed (GT Metro review was emailed today). We asked them to reduce the height of the lighting poles to be consistent with the form-based code standard of 27'. The applicant reduced them to 25'. Initial stormwater review has been completed however we have not received the finalized document. The plan meets or exceeds the standards and recommending the Planning Commission approval.

D. Rosa asked about the lighting and a provision for maintaining within the parking lot area.

J. Iacoangeli indicated that the lights are contained within the box so light directs downward and the lighting is evenly distributed. The photometrics are not that intense.

S. Feringa asked if more screening trees could be added along cart path. Understands this is not a requirement but a suggestion to block potential stray golf balls.

Motion by M. Timmins, second by T. Forgette to approve the site plan submitted by Grand Traverse Resort & Spa for the construction of a 260 vehicle parking lot located on a 3.00 acre parcel on the northwest corner of Grand Traverse Resort Village Drive and North Village Drive with the following stipulations:

- 1) The approved site plan package be signed by the Chairperson of the Planning Commission and the Applicant, or their representative.
- 2) Signage, if any, shall meet the Acme Township Zoning Ordinance.
- 3) Stormwater revisions must be completed prior and approved by Kris Enlow, P.E. (Beckett & Raeder) prior to issuance of land use permit.
- 4) Incorporation of additional trees along the south boundary of the project area.

Motion unanimously carried.

I. OLD BUSINESS:

a) US-31/M-72 Business District Architectural Standards

J. Iacoangeli suggests postpone pending legal review of language and present at a later time. Discretionary areas were discussed and will be addressed after additional review by planner and legal counsel.

J. PUBLIC COMMENT & OTHER PC BUSINESS

1. Zoning Administrator update on projects: None

2. Planning Consultant: J. Iacoangeli provided updates. Developers of VGT getting very close to presenting to the township a final draft of the stormwater and system that is attached to the stormwater (wetlands and basins) per the SUP. PC will receive copy of the development vegetation augmentation plan being submitted to DEQ. Should have this information by the April meeting, no later than May. Additionally, Dr. Grobel, consultant for the township on this project has resigned. He feels to some degree that he is hearing too often that he is the one to ensure the stormwater system will work. Professionally he doesn't want to be put in this position because no one can tell on any of these stormwater systems if they are going to work the way they were intended. He also felt that on some issues that his recommendations were not taken seriously by the developer. Township is going to bring in a 3rd party stormwater review consultant who was not at all part of the project to provide a legitimate peer-review. A contract has been signed with Cardno JF New, out of Grand Haven, MI. They specialize in ecological assessment and wetland restoration projects. They will do the peer review on the designs that will be submitted.

3. P C Education etc.: Wentzloff- Report on T.A.R.T trails.

Currently looking at the possibility of taking T.A.R.T Trail down Bunker Hill. Looked at four routes and weigh them according to criteria. Routes considered were 1) taking it through the VGT property, 2) up Bunker Hill to Bates 3), take down the shore and Mount Hope to pedestrian tunnel and then to Bates, and 4) proposed taking it through Bayside parks and then looking at taking it through VGT. Julie Clark of T.A.R.T met K. Wentzloff and M. Timmins (Parks and Recreation) to look at possibility of bringing trail from Bayside Park, through Deepwater Point or to trails behind Christ the King up to get to Lochenheath or some other easement. Looking at crossing points, curb cuts, elevations, etc. taking it all the way to Elk If you are planning to attend and are physically challenged, requiring any special assistance, please notify Cathy Dye, Clerk, within 24 hours of

Rapids. Some like a crossing at Twisted Fish or water tower. Have to consult with MDOT. Cross at Bunker Hill possible to get to Acme parks along the shoreline. VGT and GT Resort would be spurs of the trail.

Forgette - Report on Bayshore Corridor/MDOT meeting.

Submitted a highlight summary provided by John Syche on the Bayshore Corridor/MDOT meeting with Grand Traverse County, area Townships, and MDOT personnel. Access management seems to be a big concern of all. Monies are available from MDOT to conduct an access management plan that all seem to be interested in. Acme relevance was provided and document attached to the meeting minutes. It may not be too late for township to look at some areas along US31 with respect to access management. Road construction on US 31 and M72 to begin in April. No detours.

Timmins/Ballentine- Report on Community Engagement Class. Rosa and Wentzloff also attended. Learned how to identify stake-holders in a project and how to work with the public. Instructor did a great job and it was very informative.

Lennox – Update on Traverse RV Park. Soil and Erosion unable to conduct site visit yet due to snow. Several outstanding issues with the site plan.

PUBLIC COMMENT: None

ADJOURN: Motion to adjourn by Timmins, seconded by Ballentine. Motion carried. Meeting adjourn at 8:16pm

Highlights from Bayshore Corridor Strategy Meeting

February 24, 2015

Governmental Center

Grand Traverse County:	John Sych, County Planning and Development
Townships Represented:	Acme, East Bay, Garfield, Elmwood
MDOT Personnel:	Rick Liptak Jr. – Manager, Transportation Service Center, TC
	Patty O'Donnel – Transportation Planning Specialist, North Region

- MDOT is supportive of developing an access management plan for the corridor and may be able to provide some funding for development of a plan. Local communities will need to consider interest in a plan and providing funding for the plan.
- An access management plan would map out locations for driveway closures and cross-access locations. Implementation of the plan would be primarily in the form of site plan review actions, based on zoning ordinance provisions and cross-access agreements.
- MDOT may plan for central control of signals along the corridor. This may alleviate congestion problems. However, it could also limit gaps in the traffic to allow for pedestrians crossing the road and vehicles turning onto the road.
- Speed limit changes require a traffic study that may or may not warrant a speed limit change. In some instances, speed limits have gone up following a study. Elmwood Township will be conducting its own traffic study. MDOT has concerns about buildings being built at the right-of-way (ROW) line. They may be impacted by snow plows and some of the building features (signs, outdoor cafes) would require permits if they project into the ROW. The recommendation is to site buildings at distance to accommodate such features.
- Stormwater management improvements are being made during the reconstruction of US-31 in East Bay in 2015, but not to the extent to reduce water quality concerns of stormwater emptying into the bay. The cost of stormwater mitigation facilities can be high. Costs include finding property, construction, and maintenance.
- MDOT is accepting of building refuge islands/medians to accommodate pedestrian crossings where there are no intersections or driveways.

• US-31 project in 2015 will start in April and go through June. There will be a break for July and then the project will pick up again in August. Two lanes of traffic (one lane each way) will be provided throughout the project. No detour is planned.

Acme Relevance

- Need access management plan; look for crossovers for future parks area in Bayshore district
- MDOT has funded access mgmt. plans for communities; GT County has \$100k for corridor access mgmt.
- Look at vegetation as natural "tightening" of roadway to slow traffic down between 5 Mile and Holiday Road
- Review build out line and road right of way for Bayshore FBC district with respect to US31; MDOT has seen issues related to plow damage

Nikki Lennox

From: Sent: To: Subject: Karly Wentzloff <karly.wentzloff@gmail.com> Friday, February 13, 2015 12:02 PM Nikki Lennox Fwd: Yuba Creek

Could you please forward this to the PC and include it as correspondence in our next packet.

----- Forwarded message -----From: **Robert Garvey** <<u>bobgarvey@me.com</u>> Date: Thu, Feb 12, 2015 at 4:57 PM Subject: Yuba Creek To: <u>karly.wentzloff@gmail.com</u>

Hello Karly;

Hope all is well with you in the new year.

I am writing to you as Chair of the Planning Commission.

I wanted to express my concerns relating to mobile home development on M 72 adjacent to the Yuba Creek. I have no negative comments relating to the expansion itself. My concerns relate primarily to the close proximity of impervious surfaces and septic fields to the Creek. As you know, two branches wind their way through this property.

I appreciated your comments at the last Planning Commission meeting expressing concern with this issue after our experience with the VGT development as it relates to the Acme Creek. We are so fortunate to have two designated cold water trout streams self contained within our township.

As you may know, our family owns a 40 acre farm just north of this project. The Yuba Creek runs across our entire East property line. What goes into the Creek at this proposed site reaches our property a few minutes later. Our stretch of the Creek is still viable as a brook trout stream, meaning the water is cold enough and oxygenated enough to maintain a healthy trout habitat. We maintain a sand trap [permitted by the DEQ] in an effort to reestablish a natural gravel bottom. Development and roads adjacent to the creeks cause sand to wash into the streams ruining the natural gravel spawning habitat that you see further up stream in both the Yuba and Acme Creeks. The sand trap slowly accumulates sand which we remove when it fills up.

My concern and my request with regard to this project is straight forward. Would the Planning Commission PLEASE consider, as a prerequisite to allowing the project to move forward, an impact study ? I would suggest that the Planning Commission select the best qualified person to do the study and ask the proponent of the development pay for it . This seems a reasonable request .

We are a relatively small community . We simply don't have the expertise to make informed decisions relative to the impact of significant cumulative development adjacent to our Creeks . That's what experts are for. If mistakes are made at this stage the effects will live on long after we are gone . So , our decisions have consequences. Again, I have no problem with the concept of expanding the business, I just want reassurance that it is going to be done right with the least amount of harm to this important resource .

I remember my neighbor [now deceased], Bill Hicks, standing up at a Board meeting when the "Town Center" was first being discussed. He introduced himself as someone who knew Fred Meijer personally. Actually, Mr Hicks was instrumental in locating the existing Meijer store in Town. His statement was to the effect that he had no problem with a "town center" in Acme but " I'll be damned if I will go along with a project that threatens the Acme Creek ". He was reassured that the project would not have a deleterious effect on the Acme Creek. Bill's home is located 5 or 6 houses North of the mouth of the Acme Creek where it enters the Bay. He was also an avid fisherman.

I feel the same way about this project. I have no problem with the expansion but there is no reason not to get it right as far as impact to the creek is concerned. Having a meaningful impact study before approval will give all of us the comfort of an informed decision as it relates to the Yuba Creek.

Please give me, as a downstream resident and taxpayer, assurances that before this plan is approved that someone with expertise, someone who is not beholding to the business owner, will look at the plans and give the community assurances that there are no unreasonable threats in the design.

If there is a higher responsibility for our Township officials than protecting the watersheds I don't know what it would be .

Hopefully what I am asking for has already been made a condition of the project, if so can you let me know that?

Thank you for taking the time to read this and please share my concerns with the other members of the Commission.

Sincerely, Bob Garvey



ACME TOWNSHIP PLANNING COMMISSION MEETING ACME TOWNSHIP HALL 6042 Acme Road, Williamsburg MI 49690 March 9, 2015, 7:00 p.m.

6:30 p.m. PLANNING COMMISSION EDUCATION: Northwest Michigan Regional Prosperity Initiative

CALL TO ORDER WITH PLEDGE OF ALLEGIANCE

ROLL CALL:

LIMITED PUBLIC COMMENT: A.

Public Comment periods are provided at the beginning and end of each meeting agenda. Members of the public may address the Board regarding any subject of community interest during these periods. Comment during other portions of the agenda may or may not be entertained at the moderator's discretion.

В. **APPROVAL OF AGENDA:**

C. **INQUIRY AS TO CONFLICTS OF INTEREST:**

CONSENT CALENDAR: The purpose is to expedite business by grouping non-controversial items together for D. one Board motion without discussion. A request to remove any item for discussion later in the agenda from any member of the Board, staff or public shall be granted.

RECEIVE AND FILE: a)

Draft Unapproved Minutes of: 1.

- 1. Township Board minutes 02/03/15
- Zoning Admin. monthly report: Jan-Feb 2015 2.
- Bayshore Corridor Strategy meeting 2/24/15 Notes 3.

ACTION: b)

Draft Unapproved Minutes of: 1.

Planning Commission minutes: 02/09/2015 1.

ITEMS REMOVED FROM THE CONSENT CALENDAR: E. 1.

- F. **CORRESPONDENCE:** Robert Garvey Letter

G. **PUBLIC HEARINGS:**

H. **NEW BUSINESS:**

Grand Traverse Resort parking lot improvement site plan review a)

I. **OLD BUSINESS:**

US-31/M-72 Business District Architectural Standards a)

J. **PUBLIC COMMENT & OTHER PC BUSINESS**

- 1. Zoning Administrator update on projects:
- 2. Planning Consultant:
- 3. P C Education etc.: Wentzloff- report on trails.

Forgette- report on Bayshore Corridor/MDOT meeting

Timmins-Balentine- report on Community Engagement class

ADJOURN:



ACME TOWNSHIP BOARD MEETING ACME TOWNSHIP HALL 6042 Acme Road, Williamsburg MI 49690 Tuesday, February 3, 2015, 7:00 p.m.

CALL TO ORDER WITH PLEDGE OF ALLEGIANCE AT 7:00 p.m.

Members present:J. Aukerman, C. Dye, A. Jenema, P. Scott, D. White, J. ZollingerMembers excused:G. LaPointeStaff present:N. Edwardson, Recording Secretary

A. LIMITED PUBLIC COMMENT:

G. Veliquette, Elk Lake Road, thank the Township for their support of the last expansion of the Farmland Open Space Funds. He presented some financial figures showing the different funding. He commented that the monies the Township spent were matched 9–1. Zollinger commented that was the last of the previous Farmland millage. A new millage was approved in November.

R. Evina, 6075 Arabian Ln, compliment the Board on their handling of the VGT runoff at the January Board meeting. Evina commented that the facts were presented without the emotions.

Public comment closed

B. APPROVAL OF AGENDA:

Zollinger would like to add one item to New Business #6 Blight Grant received for the Shoreline.

Motion by Jenema, seconded by White to approve the agenda with the addition of one item to New Business # 6 Blight Grant. Motion carried by unanimous vote.

C. INQUIRY AS TO CONFLICTS OF INTEREST: None

D. CONSENT CALENDAR: The purpose is to expedite business by grouping non-controversial items together for one Board motion (roll call vote) without discussion. A request to remove any item for discussion later in the agenda from any member of the Board, staff or public shall be granted.

1. **RECEIVE AND FILE:**

d.

- a. Treasurer's Report
- b. Clerk's Revenue/Expenditure Report and Balance Sheet
- c. Draft Unapproved Meeting Minutes:
 - 1. Planning Commission 01/12/15
 - Parks and Maintenance Report Tom Henkel
- 2. APPROVAL:
 - 1. Township Board meeting minutes of 01/06/15
 - 2. Accounts Payable Prepaid of \$226,110.82 and Current to be approved of \$40,493.77 (Recommend approval: Cathy Dye, Clerk)

E. ITEMS REMOVED FROM THE CONSENT CALENDAR:

Motion by Dye, seconded by Aukerman to approve the Consent Calendar as present. Motion carried by unanimous roll call vote.

- F. SPECIAL PRESENTATIONS/DISCUSSIONS: None
- G. **REPORTS: Received and filed**

1. Sheriff's Report – Deputy: Ken Chubb

Officer Chubb stated that the Sheriff's department will be helping out with the Special Olympics at the Resort this week.

- 2. County Commissioner's Report Crawford
- **3. Road commission report McKellar** Discussion on the Hammond-Hartman road extension.
- H. CORRESPONDENCE: None

I. PUBLIC HEARING: None

J. NEW BUSINESS:

1. Discussion on order of Board Agendas/Old Business-New Business - Zollinger

Zollinger commented that at a previous Board meeting a resident raised the question of addressing Old Business before New. Zollinger was looking for the Board's input. He felt it was a matter of flexibility. When an issue of concern for the residents was on the agenda anyone, Board/Staff/Public could ask that the item be removed to the beginning of the agenda.

2. **Resolutions for Approval:**

a) Board of Review Dates

Motion by White, seconded by Jenema to approve Resolution R-2015-#4 approving the dates set for March Board of Review. Motion carried by unanimous vote.

b) Resolution on Budget amendments

Motion by Scott, seconded by Dye to approve Resolution R-2015-#5 on Budget Amendments. Motion carried by unanimous roll call vote.

c) Resolution on 2014 Metro Acme Twp Allocation

Motion by Jenema, seconded by Scott to approve Resolution R-2015-#6 for Metro Fire 2014 Township Allocations. Motion carried by unanimous roll call vote.

3. Capacity Sharing Agreement – TC Sewer Plant Acme Township

Motion by Scott, seconded by Aukerman to approve Resolution R-2015-#7 for Capacity Sharing Agreement. Motion carried by unanimous vote.

4. **Proclamation to support "Social Host Awareness Month" April**

Motion by Scott, seconded by Jenema, approving Proclaimation " April 2015 is Social Awareness Month". Motion carried by unanimous vote.

5. Immanuel LLC Status - Zollinger Zollinger commented that the Township had received \$15,605.91 from the Immanuel LLC (Bates Crossing) Bankruptcy filing. Zollinger stated that as property is sold the township will receive more money.

6. Blight Grant

Zollinger stated that the Township recently received monies from the Blight grant that the Conservancy had applied for. Zollinger would like to be able to cut a check tomorrow to the Conservancy. It will reflect in the March Post Prepaids.

Motion by Scott, seconded by White, to proceed with reimbursement to the Conservancy for the Blight Grant.

Upon listening to the recording of the Board meeting for 2/3/15 we find that a motion by Scott was made and supported by White, but due to much discussion a vote was not taken. This bill will be paid as a pre-approved on the March 3rd Board meeting. for final board support.

K. OLD BUSINESS:

1. Status Update of Board procedures - Dye

Dye gave an update on the 'Rules for Procedure". Aukerman has been working with Dye. It was Dye's goal to have a draft ready for the February Board meeting but that did not work out.

At the end of the meeting, Jean Aukerman asked if she could speak with her fellow Board members regarding "communication." She explained that she feels our township team, including John Iacoangeli and Chris Grobbel, is working very hard to contribute their expertise but she feels the communication process could be better. She wondered if other Board members felt the same. Board members discussed the subject. Jean volunteered to look into this and report back to the Board with possible process improvements. She welcomed any Board member to join her. Amy Jenema offered to work with Jean.

PUBLIC COMMENT & OTHER BUSINESS THAT MAY COME BEFORE THE BOARD:

B.Kelley, 4893 Ridgecrest, read a prepared statement into the record which is attached to the minutes.

Adjourned at 8:40 pm

To: Acme Township Board of Trustees From: Brian Kelley Date: February 3, 2015

At the last board meeting I told you that the clay discharge into Acme creek on Saturday December 27 was the worst than at any time in November or December. Some claimed that the inspection reports did not support that.

None of the inspections were conducted during the rain on December 27. The rain was forecast, and the site should have been inspected during the weather event. County did not inspect until 3 days later, on Tuesday. Creek inspections must be timely.

Another problem with the inspections was not checking the creek. Clay discharge into the creek is visually obvious. It is more difficult to see running across a grassy field. So if you make a point of not looking in the right spot, you won't see it.

The most significant inspection result was from Gosling Czubak's Bernie Jacobson. He documented that he observed them pumping the basins out into the field and wetlands. There was no water treatment system on site. That pumping was likely the reason there was so much clay discharge, from so many points, into the creek. I heard those pumps running, from the creek, on Saturday.

This is not the first time that inspectors have documented the intentional pumping of discharge toward the wetlands and creek. If the site is warned of inspections in advance, as some propose, then it is almost certain that any pumping operation will be stopped before inspectors are on site.

The Corrective Action Plan provided to DEQ says basin water will be treated or trucked offsite. That is contrary to what Mr. Jacobson documented. Mr. Jacobson also noted numerous holes in silt fences. The crew repaired them with duck tape. That is not a best practice, by any definition. One wonders why they were not aware of those issues if they were walking their own silt fences as best practices require. I can see holes in silt fences from the M72 highway.

Construction site manager Mark Walters inspected on Sunday December 28. He reported no issues. He also did not mention the pumping. Would anyone believe that a construction manager on site would be unaware of the pumping operation?

It is important to note that when the basins are pumped out it may not actually occur on the day of the rain, but days later. Also, that activity can be stopped if an inspector arrives on site. If anyone suggests that discharge into the creek is from past events and not current, they probably aren't going to mention the repeated practice of pumping the basins out.

At the last board meeting the topic of creek monitoring cost was mentioned. The Infrastructure land use permit fee for this project was nearly \$70,000. That fee covers the cost of creek inspections and monitoring.

On January 29, 2015 MDEQ issued another Notice of Violation to the site.

Brian Kelley

To: Acme Township Board of Trustees Planning Commission

From: Nikki Lennox

Date: 02/19/2015

THE FOLLOWING IS A SUMMARY OF KEY PLANNING, ZONING & ADMINISTRATIVE ACTIVITIES FOR THE MONTH OF JANUARY AND FEBRUARY 2015

Land Use Permits Issued For Jan. & Feb.: (2), Includes interior kitchen remodeling of the Bayview Inn and interior tower remodeling at the Grand Traverse Resort.

Sign Permits Issued For: Jan. & Feb.: (2), Includes a temporary sign permit and a sign permit for Advance Auto at 3939 M-72.

Planning & Zoning Projects: The Planning Commission is researching a possible amendment to its sign ordinance to allow static electronic signs for gas station prices and hotel vacancy signs. Careful attention is being paid to limiting luminosity and size.

US-31/M-72 Business District: The Planning Commission is re-visiting the architectural standards section of this ordinance in order to enhance the visual appearance of new buildings in this district.

The Planning Commission will continue to work on its "PC ACTION PLAN" (to-do list) which includes suggestions for researching several new ordinances and amending several others.

General Planning & Zoning: An application has been received from JML Design Group on behalf of Scheppe Investments for an expansion of the Traverse Bay RV Park.

An application has been received by RC Associates for an improvement to one of the parking lots at the Grand Traverse Resort.

Highlights from Bayshore Corridor Strategy Meeting

February 24, 2015

Governmental Center

Grand Traverse County:	John Sych, County Planning and Development
Townships Represented:	Acme, East Bay, Garfield, Elmwood
MDOT Personnel:	Rick Liptak Jr. – Manager, Transportation Service Center, TC
	Patty O'Donnel – Transportation Planning Specialist, North Region

- MDOT is supportive of developing an access management plan for the corridor and may be able to provide some funding for development of a plan. Local communities will need to consider interest in a plan and providing funding for the plan.
- An access management plan would map out locations for driveway closures and cross-access locations. Implementation of the plan would be primarily in the form of site plan review actions, based on zoning ordinance provisions and cross-access agreements.
- MDOT may plan for central control of signals along the corridor. This may alleviate congestion problems. However, it could also limit gaps in the traffic to allow for pedestrians crossing the road and vehicles turning onto the road.
- Speed limit changes require a traffic study that may or may not warrant a speed limit change. In some instances, speed limits have gone up following a study. Elmwood Township will be conducting its own traffic study. MDOT has concerns about buildings being built at the right-of-way (ROW) line. They may be impacted by snow plows and some of the building features (signs, outdoor cafes) would require permits if they project into the ROW. The recommendation is to site buildings at distance to accommodate such features.
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Acme Relevance

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- Look at vegetation as natural "tightening" of roadway to slow traffic down between 5 Mile and Holiday Road
- Review build out line and road right of way for Bayshore FBC district with respect to US31; MDOT has seen issues related to plow damage

DRAFT UNAPPROVED



ACME TOWNSHIP PLANNING COMMISSION MEETING ACME TOWNSHIP HALL 6042 Acme Road, Williamsburg MI 49690 February 9, 2015, 7:00 p.m.

6:30 PC EDUCATION: The Right to Farm Act and Urban Agriculture. Planning commission members watched a video.

CALL TO ORDER WITH PLEDGE OF ALLEGIANCE AT 7:00PM

Members Present:	J. DeMarsh, M. Binkley, B. Finch, D. Rosa, S. Feringa, M. Timmins, T. Forgette,		
	K. Wentzloff		
Members excused:	D. White		
Staff present:	J. Jocks, Legal Counsel		
	N. Lennox, Zoning Administrator		
	J. Iacoangeli, Planner		

A. LIMITED PUBLIC COMMENT:

C.Abernathy, 4312 Westridge Drive, stated last meeting there was discussion on electronic signs and she noted that the sign for Speedway on Four Mile Road is very visible in both directions along US31.

B.Kelley, Ridgecrest Road stated he was opposed to electronic signs of any kind as they take away from the rural character of the township; additionally high costs of the signs may not be appropriately used as a factor on whether they will be used or not. Thinks signs in windows of Bravo Zulu are questionable.

B. SPECIAL PRESENTATION: None

C. APPROVAL OF AGENDA:

Motion by Binkley, seconded by Feringa, to approve the agenda as presented. Motion carried.

D. INQUIRY AS TO CONFLICTS OF INTEREST: None

E. CONSENT CALENDAR:

a) **RECEIVE AND FILE:**

- 1. Draft Unapproved Minutes of:
 - 1. Township Board minutes 1/06/15

b) ACTION: 1. D

- Draft Unapproved Minutes of:
 - 1. Planning Commission minutes 1/12/15

F. ITEMS REMOVED FROM THE CONSENT CALENDAR:

- 1. None
- Motion by Timmins to approve the consent calendar, second by Forgette. Motion carried.

G. CORRESPONDENCE: none

H. **PUBLIC HEARINGS:** none

I. NEW BUSINESS:

a) Traverse Bay RV Park SUP Amendment

Fred Campbell, JML Design Group 225 E. 16th Street, presented updated plans for expansion of the current Traverse Bay RV Park owned by Scheppe Investments and located at 5555 E. M-72. The

DRAFT UNAPPROVED

request is a major amendment to SUP 99-03P, developing an additional 26.65 acres and adding 81 new RV campground sites to the existing park to include 12x16' coach houses for storage at each RV site. The work will be done in phase, Phase III a, III and Phase IV. Phase III a will be done first and sites prepared for five (5) "Park Model" pre-manufactured units at 399 sq. ft. to be owned with lots, but not for year-round occupancy per state campground regulations. These sites will tie into existing infrastructure. Phase III will add 50 sites and Phase IV will add 26 more sites. None of the site utilities can be permanent; quick connects are used. Project is anticipated to be built over a two-year period. Discussions followed.

D. Rosa asked about traffic into and out of the site. Getting onto M72 can be challenging in the summer

F. Campbell – There is a rather large ingress/egress coming off of M72. MDOT was sent a letter regarding the updated plans.

D. Scheppe - Thanked planning commission for round-about at Lautner as it will help the tenants egress the park. Advising tenants to leave the park westbound and using the roundabout to transition to eastbound without having to cross M72 traffic.

S.Feringa – East bound traffic will be slowed down with upcoming M72 upgrades

M. Timmins – Asked about owners' responsibility for landscaping and if the owners of development would have to follow township planting guidelines or does that not apply because it is more like residential.

J. Iacoangeli – Will take a look at this

K. Wentzloff – landscaping noted on berm.

T. Forgette – State campground regulations oversee landscaping

D. Scheppe – Protocol is set in condo documents. Site landscaping is monitored closely and certain items need to be wrapped to prevent deer from eating them during the offseason. Feels they have extremely tight guidelines but would also look at township guidelines.

M. Binkley – Asked for clarification on the number of sites.

F. Campbell – Soil erosion permit request includes work on a steep embankment that needs to be prepared and levelled for the model park model sites and requires them to take out a pond, put in water/sewer infrastructure and then finish grade.

S. Feringa asked for clarification on coach houses and park model units.

F. Campbell - Coach Houses were part of the original SUP

K. Wentzloff - Asked for clarification on total number of units and soil erosion permit.

J. Iacoangeli – Township is looking at review as a whole; all phases proposed.

K. Wentzloff - Emphasized the importance to follow all permitted measures to protect water resources for any site work that is being proposed; especially with the sites proximity to Yuba Creek.

Motion by D. Rosa, seconded by Timmins, to hold a public hearing for the proposed expansion of the Traverse Bay RV Park, motion carried.

J. OLD BUSINESS:

a) Electronic signs

J. Iacoangeli led the planning commission through a series of scenarios asking which zoning district, type of use, change requirements, size, and other factors. Discussion occurred. Consensus of planning commission members was to limit to gas stations and hotels, be non-distracting, text height based on road speed.

b) PC Year End Report and 2015 projects for discussion

J.Iacoangeli discussed with planning commission the past year accomplishments and highlights and identified potential 2015 initiatives the planning commission may wish to move forward with such as Zoning Ordinance Revisions and Capital Improvement Programs. He and legal counsel agree that revisions are desperately needed.. Estimated cost for the zoning ordinance revisions would be around \$35,000 - \$45,000. Grants could be used to offset costs. The Coastal Zone Management grant could be used and John could help the township to write. K. Wentzloff suggested we should present this to the board as an official presentation sometime before the budget is set in May/June.

DRAFT UNAPPROVED

c) US/31-M/72 Business District Architectural Standards

J. Iacoangeli summarized and discussed potential changes/clarifications to the US31/M72 Business District architectural standards to help commissioners in future projects. It was suggested to get feedback from the Acme Business Association prior to adoption. Discussions included how the suggested changes may have applied to previously approved site plans.

K. PUBLIC COMMENT & OTHER PC BUSINESS

1. Zoning Administrator update on projects: GT Resort site plan for parking lot improvements. S. Feringa explained they would have to fall under zoning because they are on tax roll with this property.

2. Planning Consultant: none

3. P C Education etc.: Four commissioners are attending Michigan Association of Planning Community Engagement Workshop with J. Iacoangeli.

Public Comment:

B.Kelley – Liked direction of commission on electronic signage. Stated he was unable to read drawings on the RV Park from the website. He has soil erosion concerns and the site work staging.

R. Babcock - Questions the pond situation on RV site and tearing up of the pond.

C. Abernathy – RV Park developers seem cavalier in the approach to storm water and soil erosion.

ADJOURN: Motion by Timmins, second by Finch, to adjourn. Motion approved. 8:35pm

Nikki Lennox

From: Sent: To: Subject: Karly Wentzloff <karly.wentzloff@gmail.com> Friday, February 13, 2015 12:02 PM Nikki Lennox Fwd: Yuba Creek

Could you please forward this to the PC and include it as correspondence in our next packet.

----- Forwarded message -----From: **Robert Garvey** <<u>bobgarvey@me.com</u>> Date: Thu, Feb 12, 2015 at 4:57 PM Subject: Yuba Creek To: <u>karly.wentzloff@gmail.com</u>

Hello Karly;

Hope all is well with you in the new year.

I am writing to you as Chair of the Planning Commission.

I wanted to express my concerns relating to mobile home development on M 72 adjacent to the Yuba Creek. I have no negative comments relating to the expansion itself. My concerns relate primarily to the close proximity of impervious surfaces and septic fields to the Creek. As you know, two branches wind their way through this property.

I appreciated your comments at the last Planning Commission meeting expressing concern with this issue after our experience with the VGT development as it relates to the Acme Creek. We are so fortunate to have two designated cold water trout streams self contained within our township.

As you may know, our family owns a 40 acre farm just north of this project. The Yuba Creek runs across our entire East property line. What goes into the Creek at this proposed site reaches our property a few minutes later. Our stretch of the Creek is still viable as a brook trout stream, meaning the water is cold enough and oxygenated enough to maintain a healthy trout habitat. We maintain a sand trap [permitted by the DEQ] in an effort to reestablish a natural gravel bottom. Development and roads adjacent to the creeks cause sand to wash into the streams ruining the natural gravel spawning habitat that you see further up stream in both the Yuba and Acme Creeks. The sand trap slowly accumulates sand which we remove when it fills up.

My concern and my request with regard to this project is straight forward. Would the Planning Commission PLEASE consider, as a prerequisite to allowing the project to move forward, an impact study ? I would suggest that the Planning Commission select the best qualified person to do the study and ask the proponent of the development pay for it . This seems a reasonable request .

We are a relatively small community . We simply don't have the expertise to make informed decisions relative to the impact of significant cumulative development adjacent to our Creeks . That's what experts are for. If mistakes are made at this stage the effects will live on long after we are gone . So , our decisions have consequences. Again, I have no problem with the concept of expanding the business, I just want reassurance that it is going to be done right with the least amount of harm to this important resource .

I remember my neighbor [now deceased], Bill Hicks, standing up at a Board meeting when the "Town Center" was first being discussed. He introduced himself as someone who knew Fred Meijer personally. Actually, Mr Hicks was instrumental in locating the existing Meijer store in Town. His statement was to the effect that he had no problem with a "town center" in Acme but " I'll be damned if I will go along with a project that threatens the Acme Creek ". He was reassured that the project would not have a deleterious effect on the Acme Creek. Bill's home is located 5 or 6 houses North of the mouth of the Acme Creek where it enters the Bay. He was also an avid fisherman.

I feel the same way about this project. I have no problem with the expansion but there is no reason not to get it right as far as impact to the creek is concerned. Having a meaningful impact study before approval will give all of us the comfort of an informed decision as it relates to the Yuba Creek.

Please give me, as a downstream resident and taxpayer, assurances that before this plan is approved that someone with expertise, someone who is not beholding to the business owner, will look at the plans and give the community assurances that there are no unreasonable threats in the design.

If there is a higher responsibility for our Township officials than protecting the watersheds I don't know what it would be .

Hopefully what I am asking for has already been made a condition of the project, if so can you let me know that?

Thank you for taking the time to read this and please share my concerns with the other members of the Commission.

Sincerely, Bob Garvey



Grand Traverse Resort Employee Parking Lot Improvements Site Plan Review Application Submittal to Acme Township

GRAND TRAVERSE COUNTY, MICHIGAN

February 9, 2015

PREPARED FOR

Grand Traverse Resort and Spa, LLC 100 Grand Traverse Village Blvd. Acme, MI 49610

PREPARED BY

RCA, P.C.

Gosling Czubak

PH: 231.941.8505 1280 Business Park Drive Traverse City, MI 49686

PH: 231.946.9191

Traverse City, MI 49685

PO Box 562

Rhoades Engineering

1751 Barlow Street Traverse City, MI 49686 PH: 231.947.1707

Table of Contents

Application Content

Application for Site Plan Review Zoning / Vicinity Map Narrative

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- C-1 Site Plan
- C-2 Grading & Drainage Plan
- C-3 Driveway Profile
- C-4 Soil Erosion & Sedimentation Control Plan
- C-5 Site Details
- C-6 Site Details
- L-1 Landscape Plan
- E-1 Electrical Site Plan & Details

Attachments

Owner's Authorization Letter for Agent Proof of Ownership Site photos in all directions

Application Content

- Application for Site Plan Review Zoning / Vicinity Map
- Narrative

Application Number:



Parcel Number:

ACME TOWNSHIP Grand Traverse County, Michigan Application for Special Use Permit/Site Plan Approval

Owner/Applicant Information: (please type or print clearly)

Name: <u>Henneth A Ockert (RCA, PC.)</u> Phone: 231-360-7037 Mailing Address: 6260 Arnold Rd.
Mailing Address: 6260 Arnold Rd:
City: traverse City state: Mt zip: 49690
E-Mail Address: <u>Kenercapc.biz</u>

A. Property Information:

6.

- Address: Grand Travense Resort and Spa 1.
- Property Description/Parcel Number: Acme, MI 49610 2. 01-235-020-03
- Current Zoning of Property: 3. B-3 And B-3
- If this project is one phase of a larger development and/or property subject to an 4. existing/previous Site Plan Review, Special Use Permit, or Variance, what is/are the applicable permit number(s)? NA
- 5. Provide proof of current property ownership. If applicant is not the current property owner, also provide written permission to act as agent of, and complete contact information for the current property owner.
 - See Attachments to Submittac Proposed Use/Change to Property:
 - Improvement to existing gravel parking lot
- 7. **Estimated Start and Completion Dates:** September 2015 - October 2015

Application Packet Requirements: REFER TO ACME TOWNSHIP ZONING Β. ORDINANCE AND COMPLETE ATTACHED CHECKLIST

- Fees: Include initial fee as required by the Acme Township Ordinance #2004-01, C. Schedule of Fees.
- D. Fee Escrow Policy Acknowledgement: provide completed and signed form with initial escrow fee deposit.

E. Affidavit: The undersigned affirms that he/she is the <u>agent</u> (owner, agent, lessee, or other interested party) involved in this petition and that the foregoing answers, statements and information are in all respects true and, to the best of his/her knowledge, correct. By making this application, the undersigned grants all officials, staff and consultants of Acme Township access to the subject property as required and appropriate to assess site conditions in support of a determination as to the suitability of the proposed project and/or current or future special use permit and zoning ordinance compliance.

Ous Date: 2/9/15 Signed:

Township Use/Of Application Number:	ficial Action: Date Received:
Public Hearing/Meeting:	-
Date of Advertising:	T&A Account #:



SITE PLAN REVIEW AND SPECIAL USE PERMIT APPLICANT CHECKLIST

Acme Township offers this checklist as a service to our Special Use Permit and Site Plan Review applicants. Please note that this checklist represents the minimum amount of information required to process your application. Applicant circumstances will vary, and your specific situation may require the submission of additional information to meet Zoning Ordinance requirements and facilitate the shortest and smoothest possible public process.

We strongly encourage and recommend that all potential applicants schedule a preconference meeting with township staff prior to application submission so that we may provide more customized guidance.

BEFORE FULL STAFF REVIEW COMMENCES AND A PRELIMINARY PLANNING COMMISSION HEARING/MEETING DATE IS SET the following plans and documentation must be submitted. (if applicable)

- 1. <u>Completed and signed application form</u>
- 2. <u>Completed and signed Fee Escrow Policy Acknowledgement and initial fee</u> escrow deposit (until this is received, your project will not move forward)
- 3. Narrative description of proposed use(s), including but not limited to proposed hours of operation, number of employees, and anticipated traffic generation
- 4. Site Plans conforming to the requirements of Acme Township Zoning Ordinance Section 8.2.3:
- 5. Landscape Plan (please refer to Z.O. Sections 7.5-7.5.6)
- 6. Visual image of proposed buildings (elevation drawings showing how building /will look) and proposed exterior materials
- 7. Exterior lighting plan, including locations, types and heights of all proposed exterior lighting and cut sheets (technical specifications, photometric) for all proposed exterior lighting fixtures and associated components
- 8. Plans and any other information required by ordinance specifically for your proposed land use
- 9. Storm water control plan
- 10. Parking (Section 7.5.)
- □ 11. Cross Access Easement agreement NA

Checklist Page 1

Pursuant to Acme Township Z.O. Section 8.2.4.d and 8.2.4.e, as part of the application process, the township will submit information about your project to various regulatory agencies including but not limited to the following as applicable to determine whether your project appears likely to meet their permit requirements and promote public health, safety and welfare. You will be advised as to their feedback to the township about your project and any plan revisions that may be necessary to satisfy their requirements:

	Grand Traverse County Health Department (well & septic)	231-995-6051	
R.	Grand Traverse County Department of Public Works (sewer)	231-995-6039	
Ŭ	Grand Traverse County Soil Erosion Department Forth coming	231-995-6042	
	Grand Traverse Metro Fire Department	231-947-3000	
	Grand Traverse County Sheriff's Department	231-995-5000	
	Grand Traverse County Road Commission (new roads & driveway locations)		
		231-922-4848	
	Michigan Department of Transportation (US 31 & M-72) driveways	231-941-1986	
	Michigan Department of Environmental Quality (wetlands)	231-775-3960	

NUMBER OF DOCUMENT SETS REQUIRED:

- Site Plan Review Projects: 1 set of 24 x 36 hard copy 10 sets of 11 x 17
- □_Special Use Permit Review: 1 set of 24 x 36 hard copy 10 sets of 11 x 17
- Site Plan and SUP applicants: all documents must also be submitted in PDF format.
- The township may also request CAD files and/or GIS shapefiles for portions or all of your plans

ACME TOWNSHIP Zoning Districts



- **Regulated Zoning Districts:**
 - R-1: One-Family Forest & Coastal
 - R-2: One-Family Urban Residential
 - R-3: Urban Residential
 - R-1MH: Mobile Home Residential
 - B-3: Planned Shopping Center
 - B-4: Material Processing & Warehousing
 - A-1: Agricultural

FBC Regulated Zoning Districts:

- SFN: Single Family Neighborhood
- MHN: Mixed Housing Neighborhood
- CS: Corridor Shoreline
- C: Corridor Commercial
- CF: Corridor Flexible

0.5

Miles

 Building in Parcel (refer Section 6.6.2.5)

Vicinity Map

EAST BAY TOWNSHIP

UNKER HILL RD

SNER RE

31

DOCK RD

Beckett&Raeder

TOWNLINE RD

ATES

UBA

SD

Site Location

BENNETT RD

BRACKETT

ELL RD

TOWNSHIP

WHITEWATER

HAWLEY RD

ŵ

CRISP RD

ARNOLD RD

Employee Parking Lot Improvements <u>Narrative</u>

Existing Site Conditions

The subject site's primary function is to provide parking for the employees of the Grand Traverse Resort and Spa (GTR). The existing parking lot has a gravel surface which is functional, but not ideal. The parking lot is surrounded by a number of things, which would include: a water tower, mechanical building , over nine hundred feet of open grass field, and scattered hardwood, to the north; a thick row of evergreen trees, to the east; a mix of evergreen tree screening and a golf course, to the south; and a stand of hardwoods along with approximately one hundred and sixty feet of grass field, to the west.

The site has 26 feet of vertical grade change from the northeast corner, near an existing water tower, to the south edge along the Grand Traverse Village Boulevard. In general, the site drains from the northeast corner to the south, into a grass fields along a golf course or into the road ditch at the boulevard.

In reviewing the existing site conditions it is our opinion that paving and expanding the current gravel parking to the west, into the grass field toward the hardwood stand, will not negatively impact any surround properties. Please refer to site photos in the "Attachments" tab for site photos viewing from the existing parking lot out, in all directions.

Project Description and Intent

It is the intent of the Grand Traverse Resort and Spa (GTR) to improve their current gravel employee parking lot by developing safer pedestrian and vehicular circulation routes, as well as expanding the parking lot to allow more employees the chance to park closer to the resort. It is there goal to create a safer environment for their employees by redesigning the flow of vehicular and pedestrian traffic to and from the site, as well as within the site. Currently, the employee parking lot, at peak times during the summer months, will fall short of providing adequate parking spaces for the approximately eight hundred employees that work over the course of three separate work shifts. The redesign and slight expansion of the GTR's employee parking lot should better serve and complement the on-site pre-existing use known as the Grand Traverse Resort and Spa.

In the redesign of the parking lot, realigning the driveway with the primary intersection at the Grand Traverse Village Boulevard and main resort parking lots will eliminate the traffic that goes the wrong way on a one-way road system to access the current approach to the employee parking lot. In addition, it will make a safer access for larger vehicles that are directed to utilize the employee parking lot. Currently, larger vehicles would need to make a U-turn at the east end of the boulevard to access the employee parking lot if they were coming from US-31. Otherwise, larger vehicles would need to proceed in a counter-clockwise fashion around the main hotel parking lots to access the east end of the boulevard, off South Village Drive.

It is also the GTR's goal to rotate the parking aisles ninety degrees, which will create a safer passage through the parking lot for pedestrians proceeding toward the resort and spa. Instead of pedestrians

walking perpendicular to each drive lane, within the parking lot, walking parallel to drive lanes would make pedestrians more visible to the vehicular traffic coming and going.

Finally, expanding the employee parking lot will definitely allow more employee's to park closer to the resort during peak summer months. Currently there are times when employees are shuttled into work, by the resort, due to a shortage of parking which ultimately hinders efficiency and productivity for employees and the GTR as a whole.

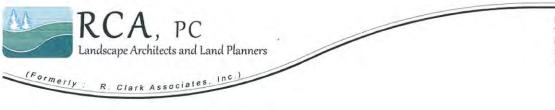
In conclusion, it is in the Grand Traverse Resort and Spa's best interest to keep trying to make its properties more accessible and safer by improving their current parking and road facilities where possible. It is with that, that the GTR request approval to expand and pave its existing employee parking lot as illustrated in the enclosed plans.

Drawing Package

- T-1 Cover Sheet
- T-2 Existing Site Conditions
- C-1 Site Plan
- C-2 Grading & Drainage Plan
- C-3 Driveway Profile
- C-4 Soil Erosion & Sedimentation Control Plan
- C-5 Site Details
- C-6 Site Details
- L-1 Landscape Plan
- E-1 Electrical Site Plan & Details

Attachments

- Owner's Authorization Letter for Agent
- Proof of Ownership
- Site Photos in All Directions



P.O.Box 562 Traverse City, MI 49685 Ph: 231.941.8505 Fax 231.947.2748 Ken@rcapc.biz

Date: 2-4-15

Acme Township Staff 6042 Acme Road Williamsburg, MI 49690

RE: Letter to authorize RCA, PC. as owner's agent

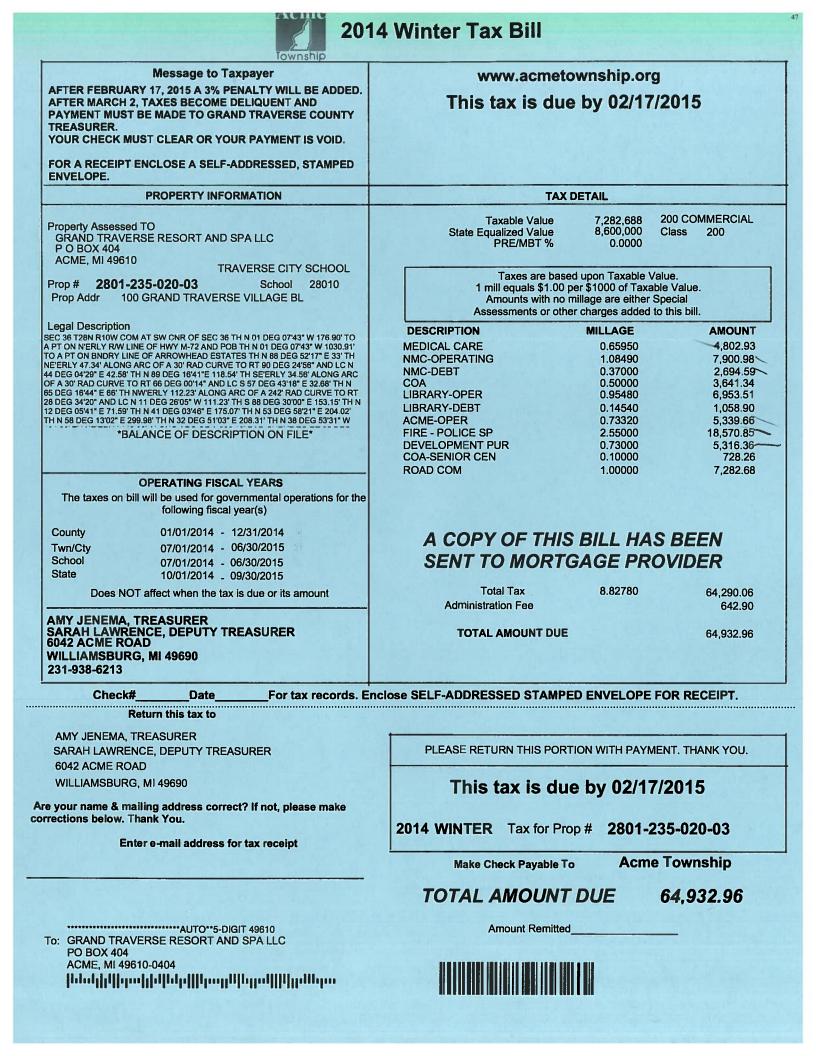
Project # 14012

Dear Acme Township Staff,

I, <u>*Timothy Normace*</u>, here by state that RCA, PC. be authorized to make application as my agent, for a land use permit regarding planned site improvements at the Grand Traverse Resort and Spa which is described as 100 Grand Traverse Resort Village Boulevard, Williamsburg, MI 49690.

Applicant

Timothy E. Norman, General Manager, Grand Traverse Resort re ItSM \$ \$pa, LLC. Print Signature Date





View to the East of existing parking lot



View to the North of existing parking lot



View to the North of existing parking lot



View to the South of existing parking lot



View to the South of existing parking lot



View to the West of existing parking lot

EARTH CHANGE PERI	WIT
GRAND TRAVERSE COUNTY Soil Erosion & Sedimentation Control Department	
2650 LaFranier Road	
Traverse City, MI 49686 (231) 995-6042	
Permit No. 23435 Township ACME	
Address 100 Grand Traverse Villag	3 BIND
Section No. 35 Town 25 Range 9	
Date of Issue 2 5/15 Date of Expiration 2/5/10	
SOIL EROSION and SEDIMENTATION CONTROL (PART 91 OF ACT 451, P.A. 1994, as amended)	t. E
GRAND TRAVERSE COUNTY SOIL EROSION & SEDIMENTATION CONTROL ORDINANCE (as amended)	
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PLEASE POST PERMIT VISIBLE FROM STREET OR HIGHWAY.

GTC, 587 Rev. 11/13

SESC PERMIT

Under the provisions of PART 91, SOIL EROSION & SEDIMENTATION CONTROL ACT (SESC) (1994 PA 451 as amended) and/or GRAND TRAVERSE COUNTY SESC ORDINANCE, as amended.

GRAND TRAVERSE COUNTY SOIL EROSION & SEDIMENTATION 2650 LAFRANIER RD TRAVERSE CITY MI 49686 Phone # (231) 995-6042 Permit #: 23435 Type: COMM/IND Issued: 2/10/2015 Expires: 2/05/2016 Fee: 395 Receipt #: 37153 Applied: 2/05/2015

Owner: GRAND TRAVERSE RESORT & SPA PO BOX 404 ACME MI 49610

Contractor/On-Site responsible person:

DEQ Permit #:

Issue Date:

Authority is hereby granted to make the following earth changes:

EXPANDING GRAVEL PARKING LOT, PAVING 3 ACRE, DRAIN SYSTEM, SIDEWALKS

Located at: 100 GRAND TRAVERSE VILLAGE BLVD In ACME Twp, Sect 35 Town 25 Range 9 Lot # Block Sub: Property Tax #: 28 - 01 - 235 - 020 - 03

Work to be done under authority of this permit is subject to the following special instructions and requirements:

This permit does not obviate the need for any other state or local permits or authority to conduct these activities. This permit is approved according to the site plan received on February 04, 2015, with the following conditions:

1) The plan contains detailed erosion control measures and the proper sequence for installation of those measures. Follow all plan details at all times.

2) Sweep the street as needed if soil is tracked onto it from the site.
3) Within 5 days of final grading place 4 inches of topsoil, grass seed and mulch over all disturbed soils or use a 2"-3" thick layer of woody mulch to provide a protective cover on the disturbed soil surface.
4) Remove silt fence after all disturbed soils are stabilized and Prior TO calling for a final erosion control inspection.
All Earth Change permits require a final site inspection.

The landowner/applicant is responsible for contacting our office PRIOR TO THE PERMIT EXPIRATION DATE to request a final inspection after all permit requirements are met and the site is stabilized in order for the permit to be closed.

ete Bruski Signature

THIS PERMIT ALONG WITH THE SITE PLAN MUST BE POSTED AT THE PROJECT SITE Continued on Next Page

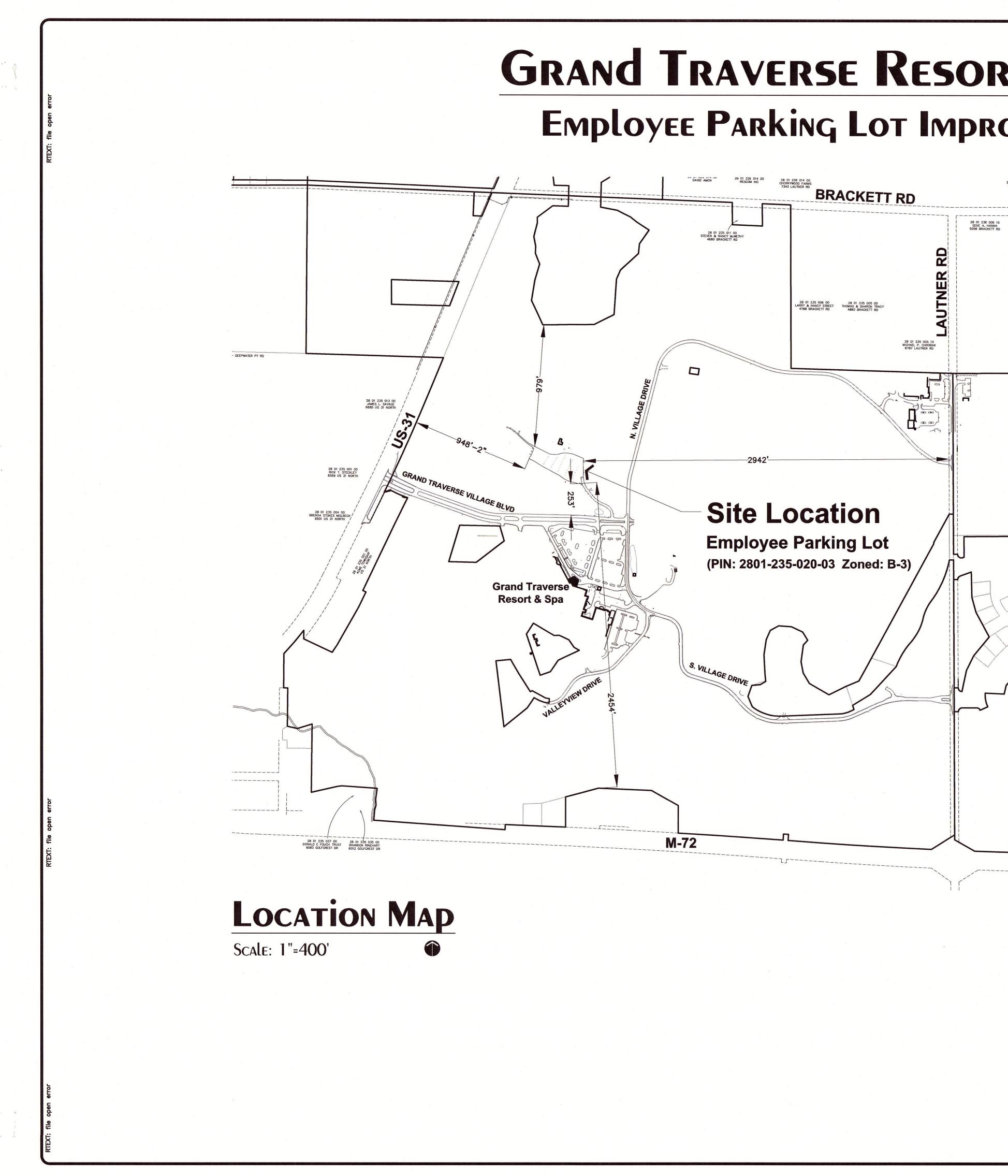
COMMENCEMENT OF WORK PRIOR TO RECEIVING THE APPROVED PERMIT is a

municipal or state civil infraction that may subject you to a fine of not more than \$2,500.00. Knowingly violating the Soil Erosion and Sedimentation Control Act, of 1994 PA 451, as amended or knowingly making a false statement on the permit application or a soil erosion or sedimentation control plan may subject you to a civil fine of not more than \$10,000.00 for each day of the violation. In addition, knowingly violating section 9112 or 9117, relating to a determination that the work undertaken does not conform to a permit or plan or adversely affects adjacent land or waters, may be responsible for a civil fine of not less than \$2,500.00 nor more than \$25,000.00 for each day of the violation.

PERMIT PROCEDURES

In accordance with Part 91 of Act 451 of 1994, as amended, and/or the GTC Ordinance #25 of 2003 and their corresponding General Rules, the undersigned herewith makes application for a permit to undertake a proposed earth change. Permit requirements will be as follows:

- 1. A person proposing to undertake an earth change shall submit an application for a state prescribed permit to the appropriate enforcing agency. In land development, the application shall be submitted by the landowner or their designated agent (a person who has written authorization from the landowner to sign the application and secure a permit in the landowner's name), whoever is responsible for the earth change.
- 2. The application shall be accompanied by a soil erosion and sedimentation control plan and any other document with the appropriate enforcing agency may require.
- 3. The soil erosion and sedimentation control plan shall be reviewed and approved by a person designated by the county or local enforcing agency who is trained and experienced in soil erosion and sedimentation control techniques.
- 4. The appropriate enforcing agency shall approve, disapprove or require modification of an application for an earth change permit within 30 calendar days following receipt of the application. Notification of disapproval shall be made by certified mail with the reasons for disapproval and conditions required for approval.
- 5. A state prescribed application form shall be provided to the applicant by the county or local enforcing agency.
- 6. A state prescribed permit shall be used by each county for local enforcing agency and shall include any additional provisions that may be required by the county or local enforcing agency. The permit shall be available on the site of the earth change for inspection.
- 7. Upon a determination that an applicant has met all the requirements of Part 91 and the promulgated rules, and the local ordinance, if applicable, the appropriate enforcing agency shall issue a permit for the proposed earth change.
- 8. An "authorized public agency" is exempt from obtaining a permit from a county or local enforcing agency, but shall notify the county or local enforcing agency of each proposed earth change.
- 9. When an earth change is under the jurisdiction of 2 or more local or county enforcing agencies, the person must obtain coverage in each jurisdiction, unless there is an interlocal agreement.



GRAND TRAVERSE RESORT & SPA Employee Parking Lot Improvements

Site Data

Location: 100 Grand Traverse Village Blvd. Size: 715.09 Acres (Proposed disturbed area = 3 Acres) Zoned: B-3 and R-3 (Employee Parking Lot is in B-3 District) Existing Use: Resort & Hotel **Proposed Improvements: Expand and Pave Employee Parking Lot** Setbacks for B-3: (referenced in 9.12.e of Township Ord.) Transition Strip: (referenced in 9.12.f of Township Ord.)

NOTES

The proposed changes to this site include the paving and expansion of the existing employee parking lot.

The current shape and size of the storm water control basin near the existing employee parking lot is proposed to be expanded to accommodate all additional runoff from the newly paved parking lot. Regarding the driveway to the parking lot, it is proposed to be realigned with the main intersection on the Grand Traverse Village Boulevard for a safer access. In addition, realignment of the driveway will decrease the amount of storm water runoff into the boulevard's road ditch.

All proposed lighting shall comply with the standards of the Zoning Ordinance

Owner will be responsible for all permanent soil erosion and sedimentation control measures following the completion of construction.

ESTIMATED CONSTRUCTION SCHEDULE

9-1-15	Install silt f
9-2-15	Strip topso
9-7-15	Install storr
9-14-15	Stake all cu
9-21-15	Establish fi
9-28-15	Restoration
5-29-16	Remove all

SHEET INDEX

- **Cover Sheet**
- **Existing Site Condition**
- Site Plan **C-1**
- Grading & Drainage Plan **C-2**
- **Driveway Profile C-3**
- **C-4**
- Site Details **C-5**
- Site Details C-6
- Landscape Plan L-1
- E-1 Lighting Photometrics Site Plan

- Buildings No closer than twice it's height to any property line
- Parking Needs to be at least 100' from Residential Properties
- Existing Gravel Parking Spaces: Approximately 138 Car Spaces + 9 Bus Spaces **Proposed Paved Parking Spaces: 254 Car Spaces + 6 Bus Spaces**

fence per plan

oil and establish rough grade for site (including storm basins) m pipe

- urbing and sidewalk and install
- inal gravel base and install HMA
- n of all disturbed areas
- **Remove all erosion and sedimentation control measures**

Soil Erosion & Sedimentation Control Plan



Land Planners City, MI 49685

Spa Blvd

Resort se Villa 49610

Grand Traverse 100 Grand Travers Acme, MI

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Parking Acme, N

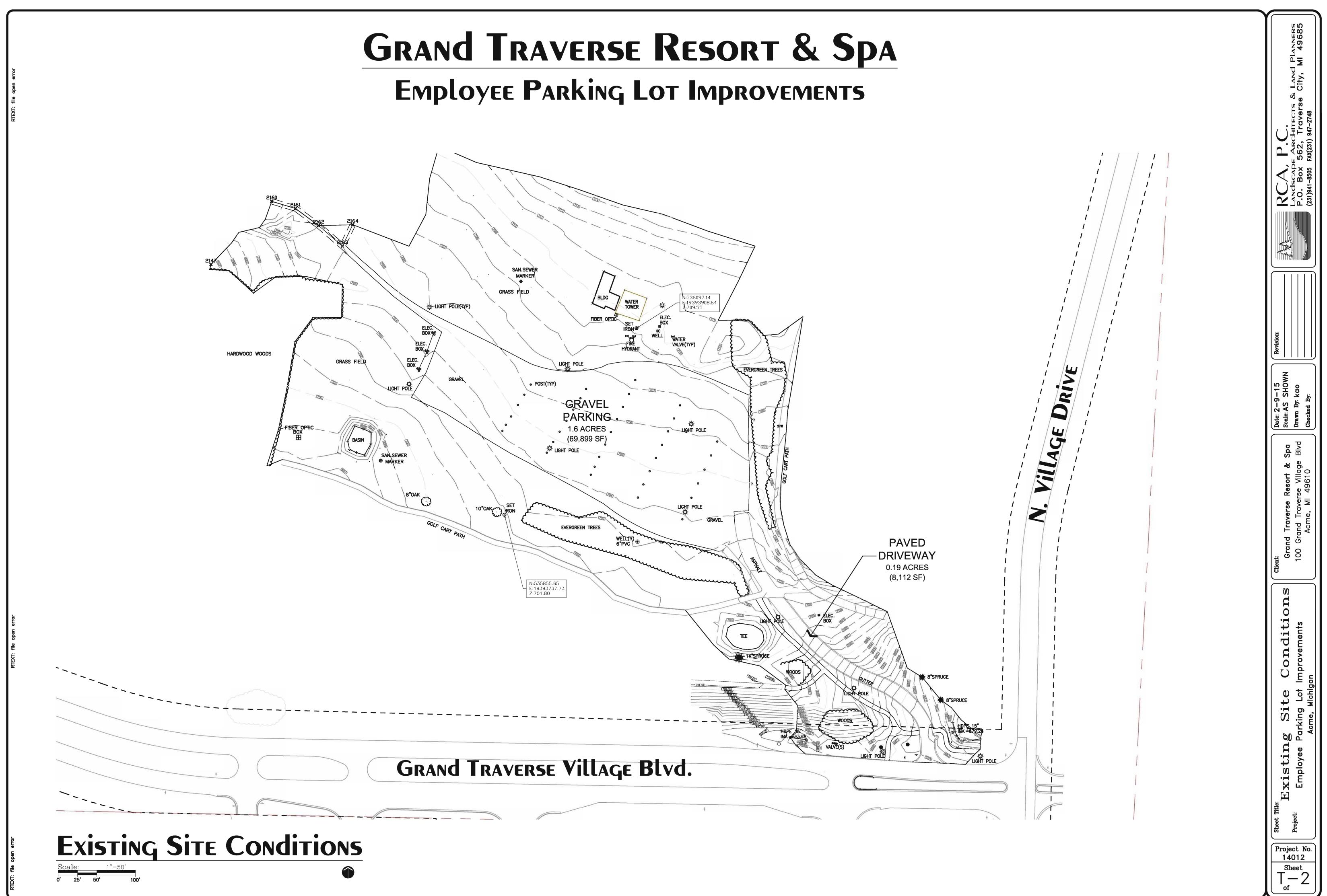
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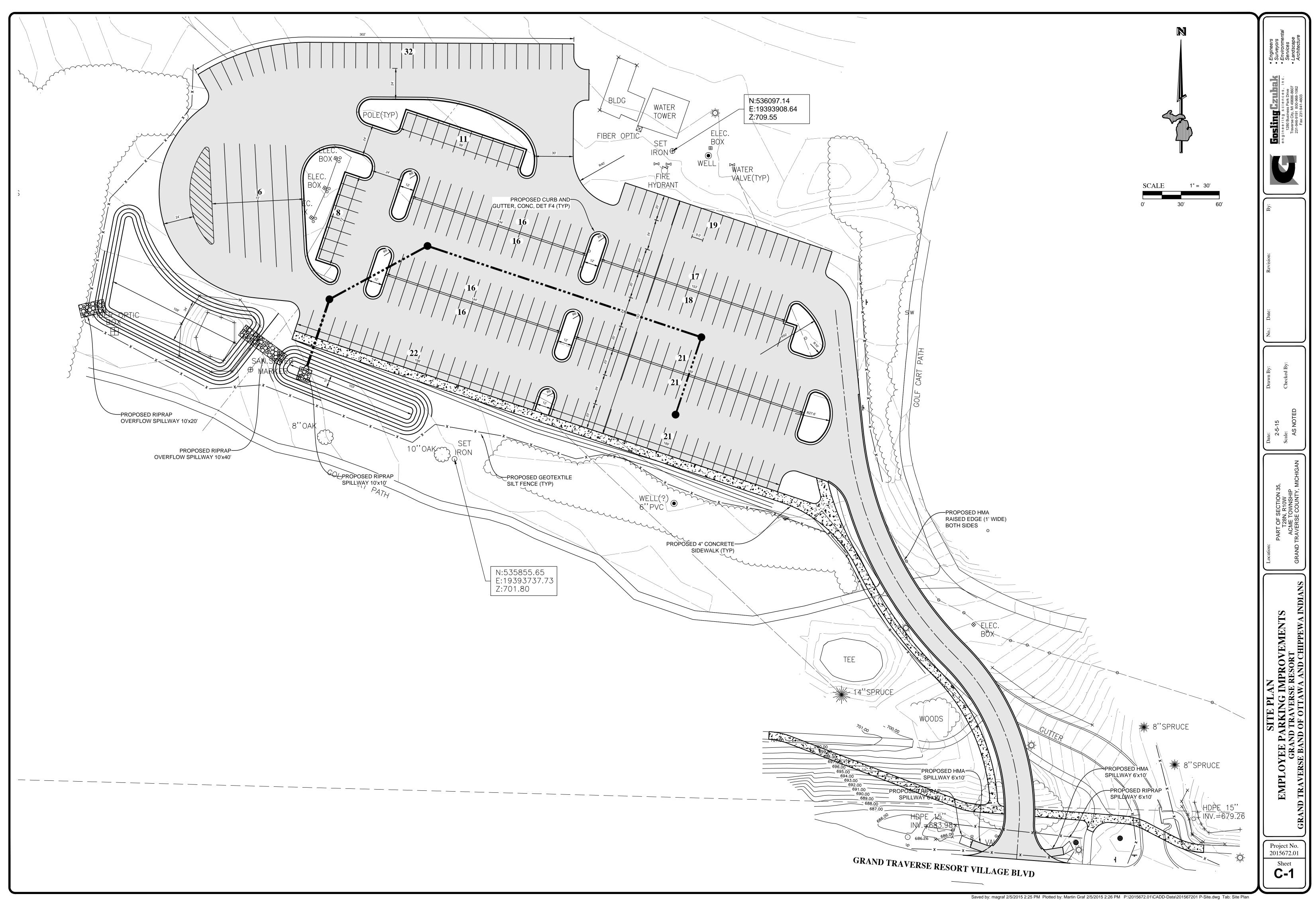
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14012

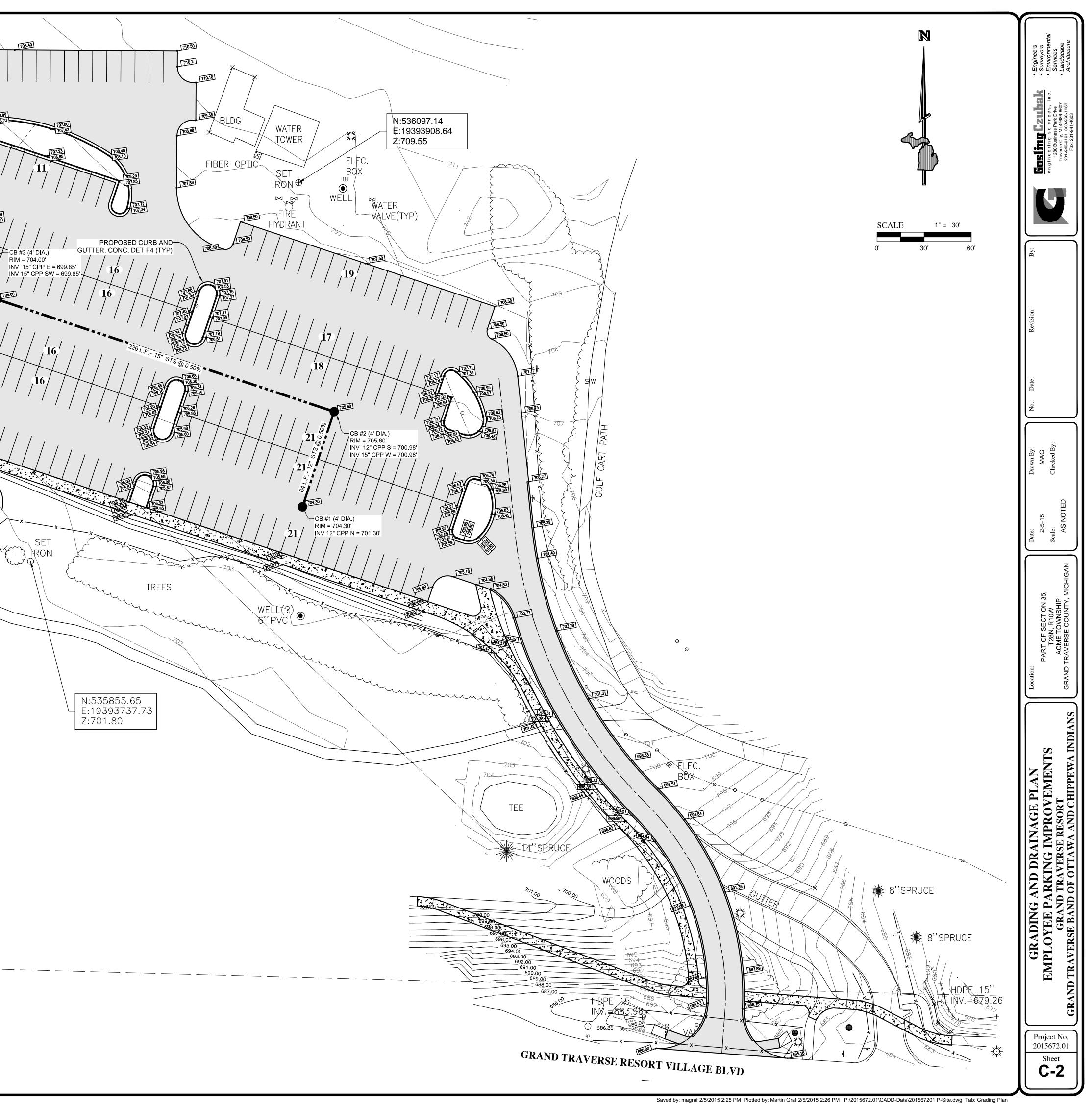
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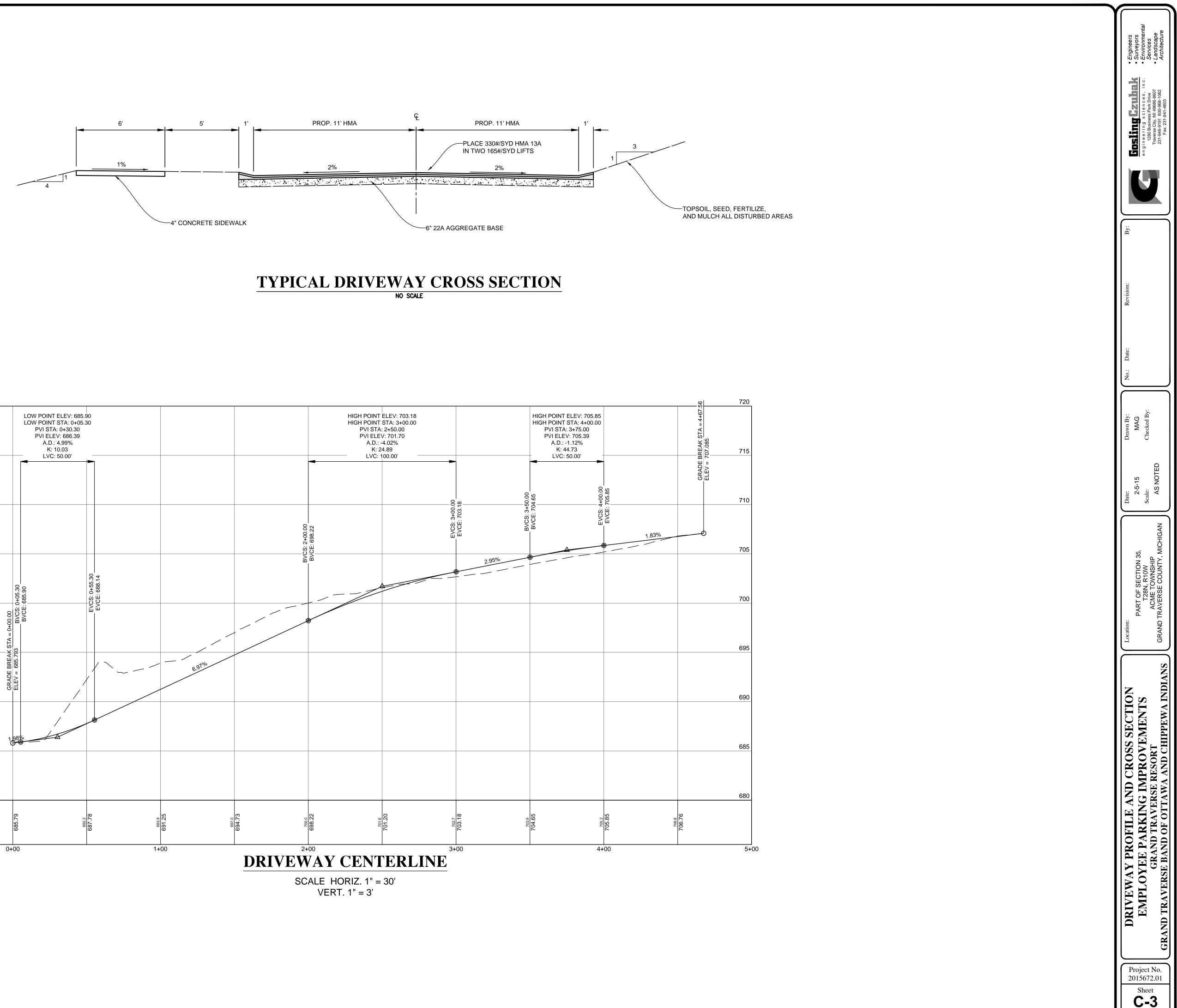
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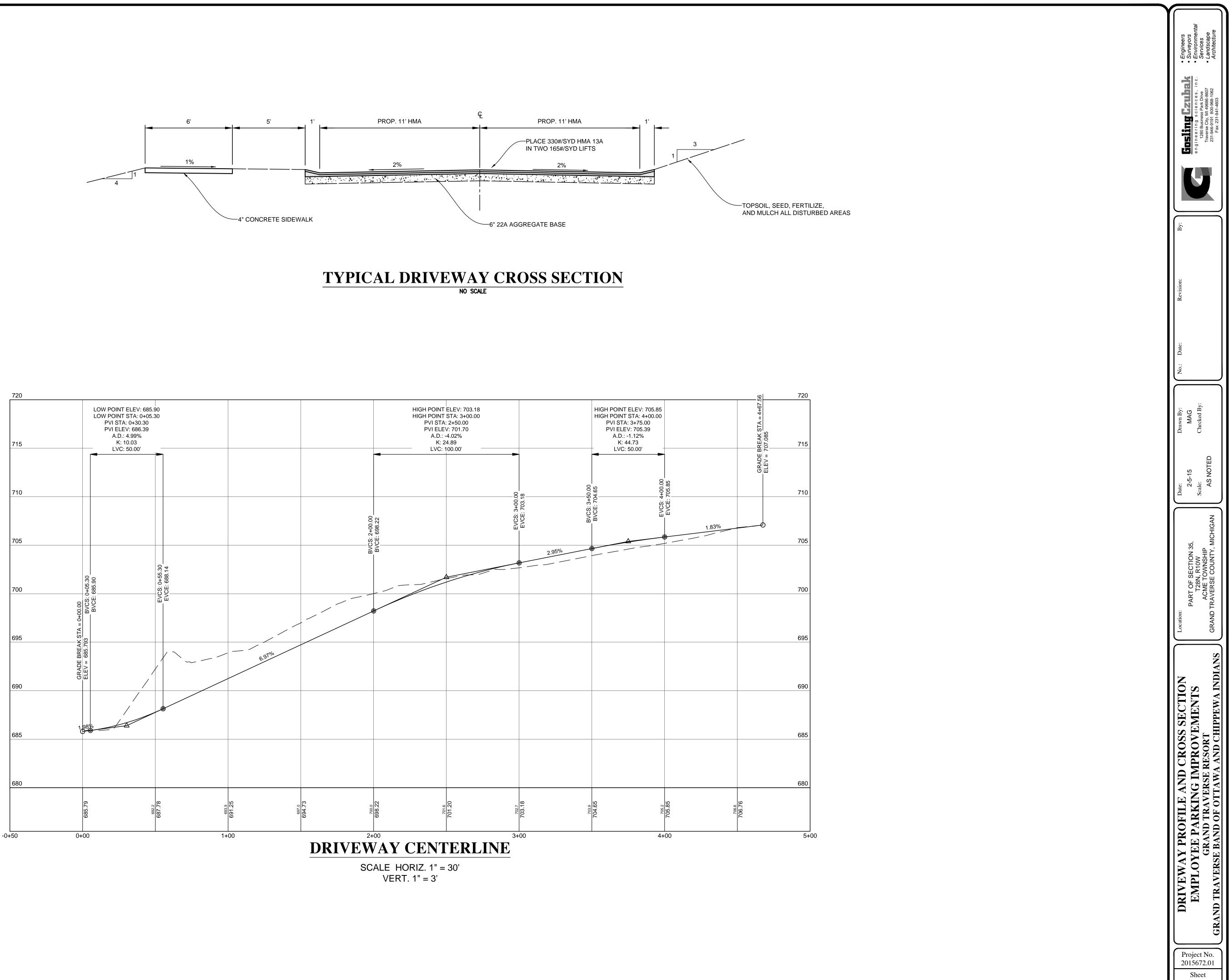


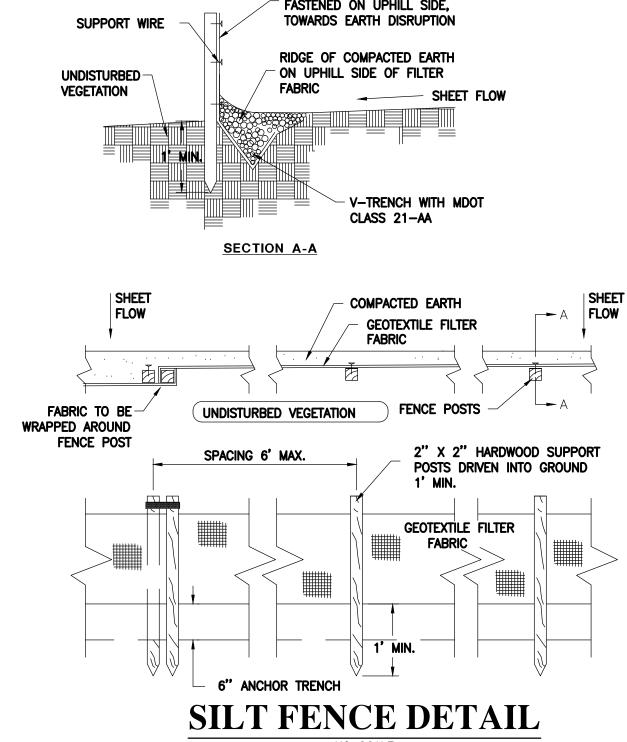


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								BOTTOM ELE	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10'
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- Coloulations based on t	ha Natural Daggurag	Concentration Sec	iaa Mathad					BOTTOM ELE OVERFLOW E VOLUME - 3	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10'
<ul> <li>Calculations based on t</li> <li>2 yr., 24 hr. Storm</li> </ul>	he Natural Resource Total Rainfall, P	Conservation Serv 2.09 in	vice Method.		<u>Formulas</u> Runoff (in)=			BOTTOM ELE OVERFLOW E VOLUME - 3	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10'
			vice Method.		Runoff (in)= Runoff Volu	= Q = (P2 ume (cft )=		BOTTOM ELE OVERFLOW E VOLUME - :	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10'
2 yr., 24 hr. Storm	Total Rainfall, P	2.09 in	vice Method.		Runoff (in)=	= Q = (P2 ume (cft )=	2S) ² /(P+.8S) Qx 1/12x Area	BOTTOM ELE VOLUME - : GOLF CAR	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10'
2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification	Total Rainfall, P Total Rainfall, P	2.09 in	vice Method.          Area (sft)         71687		Runoff (in)= Runoff Volu	= Q = (P2 ume (cft )=	2S) ² /(P+.8S)	BOTTOM ELE OVERFLOW E VOLUME - 3 GOLF CAR (sft)	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10'
2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk	Total Rainfall, P Total Rainfall, P <b>Cover Type</b> Impervious Impervious Impervious	2.09 in 3.89 in <b>Soil Type</b> A A A A	<b>Area (sft)</b> 71687 8132 2220	Area (Acres) 1.65 0.19 0.05	Runoff (in)= Runoff Volu S = 1000/C <u>CN</u> 98 98 98 98	= Q = (P2 ume (cft )= CN - 10 $\frac{s}{0.2}$ 0.2 0.2 0.2	2S) ² /(P+.8S) Qx 1/12xArea Q, Runoff Depth (in.) 1.864 1.864 1.864 1.864	BOTTOM ELE OVERFLOW E VOLUME - 3 GOLF CAR (sft) Runoff Volume (cft) 11133 1263 345	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10'
2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious	2.09 in 3.89 in <b>Soil Type</b> A A	<b>Area (sft)</b> 71687 8132	<b>Area</b> (Acres) 1.65 0.19	Runoff (in)= Runoff Volu S = 1000/C <u>CN</u> 98 98	= Q = (P2 ume (cft )= CN - 10 <u><b>S</b></u> 0.2 0.2	2S) ² /(P+.8S) Qx 1/12xArea Q, Runoff Depth (in.) 1.864 1.864	BOTTOM ELE OVERFLOW E VOLUME - : GOLF CAR (sft) Runoff Volume (cft) 11133 1263	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10'
2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Pervious Pervious	2.09 in 3.89 in <b>Soil Type</b> A A A A	<b>Area (sft)</b> 71687 8132 2220 48830	Area (Acres) 1.65 0.19 0.05 1.12 3.00	Runoff (in)= Runoff Volu S = 1000/C <u>CN</u> 98 98 98 98	= Q = (P2 ume (cft )= CN - 10 $\frac{s}{0.2}$ 0.2 0.2 0.2	2S) ² /(P+.8S) Qx 1/12x Area Q, Runoff Depth (in.) 1.864 1.864 1.864 0.586	BOTTOM ELE OVERFLOW E VOLUME - 3 GOLF CAR (sft) Runoff Volume (cft) 11133 1263 345 2384 15125	EV. = 697.0' LEV. = 699.0' 3,446 CFT	
2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed Proposed Condition (25 Site Area Identification	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Pervious Pervious	2.09 in 3.89 in Soil Type A A A A A Soil Type	Area (sft) 71687 8132 2220 48830 130869 130869	Area (Acres) 1.65 0.19 0.05 1.12 3.00 Area (Acres)	Runoff (in)= Runoff Volu S = 1000/C 98 98 98 98 25 CN	= Q = (P2 ume (cft )= CN - 10 <u><b>S</b></u> 0.2 0.2 0.2 30.0 <b>S</b>	2S) ² /(P+.8S) Qx 1/12xArea Q, Runoff Depth (in.) 1.864 1.864 1.864 0.586 Q, Runoff Depth (in.)	BOTTOM ELE POVERFLOW E VOLUME - 3 GOLF CAR (sft) Runoff Volume (cft) 11133 1263 345 2384 15125 Runoff Volume (cft)	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10 ³
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2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed Proposed Condition (25 Site Area Identification HMA Parking/Driveway Sidewalk	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Pervious Pervious Yr) Cover Type Impervious Impervious	2.09 in 3.89 in Soil Type A A A A A A A A A A	Area (sft)         71687         8132         2220         48830         130869         Area (sft)         116097         5900	Area (Acres) 1.65 0.19 0.05 1.12 3.00 Area (Acres) 2.67 0.14	Runoff (in)= Runoff Volu S = 1000/C 98 98 98 25 25 <b>CN</b> 98 98 98	= Q = (P2) ume (cft )= CN - 10 <b>S</b> 0.2 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> <b>S</b> 0.2 30.0 <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b></b>	2S) ² /(P+.8S) Qx 1/12x Area Q, Runoff Depth (in.) 1.864 1.864 1.864 0.586 Q, Runoff Depth (in.) 3.655 3.655	BOTTOM ELE OVERFLOW E VOLUME - 3 GOLF CAR (sft) Runoff Volume (cft) 11133 1263 345 2384 15125 Runoff Volume (cft) 35365 1797	EV. = 697.0' LEV. = 699.0' 3,446 CFT	10 ³
2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed Proposed Condition (25 Site Area Identification HMA Parking/Driveway Sidewalk Grassed/Landscaped	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Pervious Yr) Cover Type Impervious Impervious Pervious Pervious	2.09 in 3.89 in Soil Type A A A A A A A A A	Area (sft)         71687         8132         2220         48830         130869         130869         116097         5900         8872	Area (Acres) 1.65 0.19 0.05 1.12 3.00 Area (Acres) 2.67 0.14 0.20	Runoff (in)= Runoff Volu S = 1000/C 98 98 98 25 25 <b>CN</b> 98 98 98	= Q = (P2) ume (cft )= CN - 10 <b>S</b> 0.2 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> <b>S</b> 0.2 30.0 <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b></b>	2S) ² /(P+.8S) Qx 1/12x Area Q, Runoff Depth (in.) 1.864 1.864 1.864 0.586 Q, Runoff Depth (in.) 3.655 3.655	BOTTOM ELE OVERFLOW E VOLUME - 3 GOLF CAR (sft) Runoff Volume (cft) 11133 1263 345 2384 15125 Runoff Volume (cft) 35365 1797 118	EV. = 697.0' LEV. = 699.0' 3,446 CFT PATA PATA	10 ³
2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed Proposed Condition (25 Site Area Identification HMA Parking/Driveway Sidewalk Grassed/Landscaped Total	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Pervious Yr) Cover Type Impervious Impervious Pervious Pervious	2.09 in 3.89 in Soil Type A A A A A A A A A	Area (sft)         71687         8132         2220         48830         130869         130869         116097         5900         8872	Area (Acres) 1.65 0.19 0.05 1.12 3.00 Area (Acres) 2.67 0.14 0.20	Runoff (in)= Runoff Volu S = 1000/C 98 98 98 25 25 <b>CN</b> 98 98 98	= Q = (P2) ume (cft )= CN - 10 <b>S</b> 0.2 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> <b>S</b> 0.2 30.0 <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b></b>	2S) ² /(P+.8S) Qx 1/12x Area Q, Runoff Depth (in.) 1.864 1.864 1.864 0.586 Q, Runoff Depth (in.) 3.655 3.655	BOTTOM ELE OVERFLOW E VOLUME - 3 GOLF CAR (sft) Runoff Volume (cft) 11133 1263 345 2384 15125 Runoff Volume (cft) 35365 1797 118	EV. = 697.0' LEV. = 699.0' 3,446 CFT PATA PATA	10 ³
2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed Proposed Condition (25 Site Area Identification HMA Parking/Driveway Sidewalk Grassed/Landscaped Total Structural BMP Volume Infiltration Rate = Time = Infiltration Volume Detention Basin 1	Total Rainfall, P Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Pervious Pervious Impervious Pervious Reduction Calcular 1.0 24 (=Infiltration rate x t 2056	2.09 in 3.89 in Soil Type A A A A A A A A A A A A A	Area (sft)         71687         8132         2220         48830         130869         Area (sft)         116097         5900         8872         130869	Area (Acres) 1.65 0.19 0.05 1.12 3.00 Area (Acres) 2.67 0.14 0.20 3.00	Runoff (in)= Runoff Volu S = 1000/C 98 98 98 25 25 <b>CN</b> 98 98 98	= Q = (P2) ume (cft )= CN - 10 <b>S</b> 0.2 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> 0.2 0.2 30.0 <b>S</b> <b>S</b> 0.2 30.0 <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b>S</b> <b></b>	2S) ² /(P+.8S) Qx 1/12x Area Q, Runoff Depth (in.) 1.864 1.864 1.864 0.586 Q, Runoff Depth (in.) 3.655 3.655	BOTTOM ELE OVERFLOW E VOLUME - 3 GOLF CAR (sft) Runoff Volume (cft) 11133 1263 345 2384 15125 Runoff Volume (cft) 35365 1797 118	EV. = 697.0' LEV. = 699.0' 3,446 CFT PATA PATA	10 ³
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NO SCALE

## SOIL EROSION CONTROL NOTES

#### **General Erosion Control Notes**

SOIL EROSION AND SEDIMENTATION CONTROL SHALL PROTECT AGAINST LOSS OF SOIL BY THE ACTION OF WATER, ICE AND GRAVITY OF WIND.

#### **Summary of Basic Principles**

1. KEEP DISTURBED AREA AS SMALL AS POSSIBLE AT ALL TIMES.

2. STABILIZE AND/OR PROTECT DISTURBED AREAS AS SOON AS POSSIBLE FOLLOWING CONSTRUCTION ACTIVITIES IN THAT AREA..

3. KEEP STORM WATER RUNOFF VELOCITIES LOW.

4. RETAIN SEDIMENT WITHIN IMMEDIATE CONSTRUCTION AREA.

THE PURPOSE OF THIS PLAN IS TO SPECIFY METHODS FOR TEMPORARY EROSION CONTROL DURING CONSTRUCTION.

ALL SOIL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE REGULARLY MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT. COLLECTED SILT AND SEDIMENTATION SHALL BE REMOVED AS REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE SILT TRAPS OR SEDIMENTATION CONTROL DEVICES. IN SILT FENCE APPLICATIONS SEDIMENT SHALL BE REMOVED WHEN THE HEIGHT REACHES ONE HALF THE HEIGHT OF THE FABRIC. WHERE REQUIRED THE CONTRACTOR SHALL REPLACE FILTER MATERIALS WHICH HAVE BECOME INEFFECTIVE DUE TO CONTAMINATION OR PHYSICAL DETERIORATION. THE CONTRACTOR SHALL INSPECT ALL SOIL EROSION AND SEDIMENTATION CONTROL DEVICES AFTER ALL STORM EVENTS.

ALL TEMPORARY EROSION CONTROL FACILITIES SHOULD BE REMOVED BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION UNLESS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE. CARE SHOULD BE TAKEN DURING REMOVAL TO MINIMIZE SILTATION IN NEARBY DRAINAGE COURSES.

SURFACE DISRUPTION IN ADVANCE OF CONSTRUCTION INCLUDING GRADING, CLEARING OR SIGNIFICANT SOD REMOVAL SHALL BE LIMITED AS FOLLOWS, UNLESS PERMISSION IS OTHERWISE OBTAINED FROM THE GOVERNING AGENCY.

A. WET WEATHER SEASON (MARCH, APRIL, MAY) - 5 DAYS PRIOR TO BEGINNING ANY EARTH CHANGE ACTIVITY.

B. DRY WEATHER SEASON (JUNE TO NOVEMBER) - 10 DAYS

C. COLD WEATHER SEASON (DECEMBER, JANUARY, FEBRUARY) - 15 DAYS PRIOR TO BEGINNING ANY EARTH CHANGE ACTIVITY.

#### **Location Of Stockpiles**

PRIOR TO BEGINNING ANY EARTHWORK.

THE CONTRACTOR SHALL LOCATE STOCKPILES AS DIRECTED BY THE CONSTRUCTION MANAGER PER OWNER/ENGINEER OR AS SHOWN ON PLANS.

#### **Temporary Facilities**

SOIL EROSION AND SEDIMENTATION CONTROL

THE CONTRACTOR SHALL FOLLOW THE PROCEDURES DELINEATED BELOW AND CONSTRUCT AND MAINTAIN THE FACILITIES SHOWN ON THE DRAWINGS TO CONTROL WATER AND WIND EROSION DURING CONSTRUCTION OF THE PROJECT. THE CONTRACTOR SHALL IMPLEMENT ANY ADDITIONAL MEASURES, NOT SHOWN ON THE PLANS, NECESSARY TO MINIMIZE SOIL EROSION AND SEDIMENTATION.

ALL DISTURBED SURFACE AREAS (INCLUDING UTILITY TRENCHES) SHALL BE TEMPORARILY GRADED AND/OR DITCHED TO DIRECT STORM RUNOFF FROM SUCH AREAS TO SEDIMENTATION CONTROL DEVICES TO PREVENT SEDIMENT CARRYING RUNOFF FROM ENTERING A WATERCOURSE, SEWER, OR ADJACENT LANDS. SUCH SEDIMENTATION CONTROL DEVICES INCLUDE BUT ARE NOT LIMITED TO: PROTECTIVE DITCHES, SEDIMENT TRAPS, SEDIMENT FILTERS, DITCH TRAPS, PIPE BARRIERS, STRAW BALE BERMS AND FILTERS AS DETAILED AND REQUIRED AND LOCATED ON THE DRAWINGS. AFTER THE PROJECT WORK HAS BEEN COMPLETED, INSPECTED AND APPROVED, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY SEDIMENTATION CONTROL DEVICES, MATERIAL AND THEIR COLLECTED SILT AND DEBRIS AND COMPLETE THE PROJECT WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.

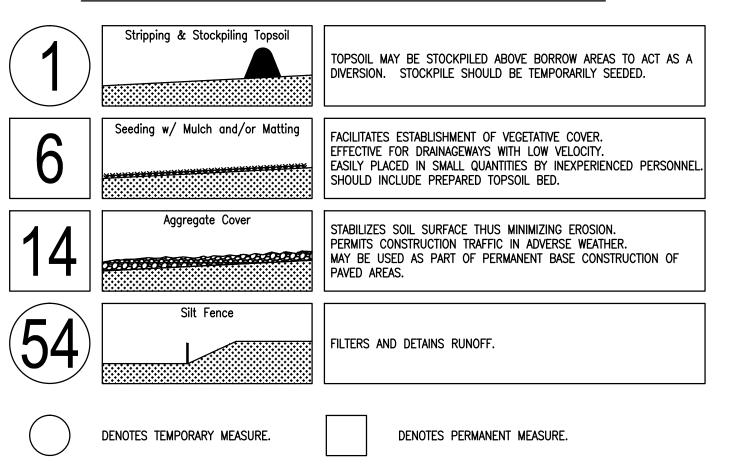
IN ROADWAY AREAS TEMPORARY AGGREGATE SURFACING SHALL BE PLACED IMMEDIATELY AFTER THE BACKFILLING HAS BEEN COMPLETED. DUST CONTROL MEASURES SHALL BE USED AT ALL TIMES.

WITHIN 15 DAYS FROM THE DATE A PROJECT IMPROVEMENT IS INSTALLED THE CONTRACTOR SHALL COMPLETE FINAL CLEANUP AND RESTORATION OF THE PROJECT AREA DISTURBED INCLUDING SPILL AREAS.

IF SEASONAL CONDITIONS PREVENT FINAL CLEANING AND RESTORATION, THE CONTRACTOR SHALL PROCEED WITH TEMPORARY STABILIZATION OF THE DISTURBED AREAS. FINAL CLEANUP AND RESTORATION WILL CONSIST OF FINAL GRADING, PAVING, PLACING TOPSOIL, SEED AND MULCH, AND/OR SODDING OF ALL DISTURBED AREAS OF THE PROJECT. TEMPORARY STABILIZATION SHALL CONSIST OF ROUGH GRADING THE DISTURBED AREAS TO A CONDITION READY TO RECEIVE TOPSOIL, SEEDING, AND MULCHING IN ACCORDANCE WITH SPECIFICATION SECTION 02270 FOR THE PROJECT. TEMPORARY STABILIZATION MATERIALS SHALL BE REMOVED AND DISPOSED OF AND FINAL CLEANUP AND RESTORATION SHALL BE COMPLETED NOT LATER THAN 60 DAYS AFTER SEASONAL CONDITIONS ALLOW PERFORMANCE OF THE REQUIRED WORK.

THE CONTRACTOR SHALL MINIMIZE THE DEPOSITION OF DIRT AND MUD ONTO PUBLIC ROADS. ALL DIRT AND MUD TRACKED ONTO PUBLIC ROADS SHALL BE REMOVED DAILY. ROADS SHALL ALSO BE CLEANED IMMEDIATELY FOLLOWING A RAIN EVENT. DIRT OR MUD WHICH COULD BE CONSTRUED AS A TRAFFIC HAZARD SHALL BE REMOVED IMMEDIATELY. STREET CATCH BASINS SHALL BE PERIODICALLY CLEANED AND FILTER FABRIC CHANGED AND MAINTAINED.

## MICHIGAN UNIFIED KEYING SYSTEM



## Grand Traverse County Requirements Soil **Erosion Control - Temporary & Permanent**

1. ALL EARTH CHANGES SHALL BE DESIGNED, CONSTRUCTED, AND MAINTAINED IN SUCH A MANNER AS TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISRUPTION.

2. VEGETATIVE STABILIZATION OR OTHER SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE DEVELOPMENT PROCESS. 3. EARTH CHANGES ASSOCIATED WITH LARGE DEVELOPMENTS SHALL BE STAGED TO KEEP EXPOSED

AREAS OF THE SOIL AS SMALL AS PRACTICABLE. CRITICAL AREAS EXPOSED DURING CONSTRUCTION SHALL BE PROTECTED WITH TEMPORARY VEGETATION, MULCHING, FILTER FENCES, OR OTHER METHODS OF STABILIZATION.

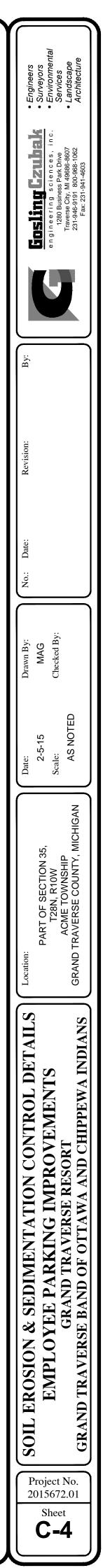
4. STORMWATER RUNOFF CONTROL AND SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED BEFORE GRADING, FILLING, OR REMOVAL OF VEGETATIVE COVER IS INITIATED. 5. SEDIMENT BASINS, DESILTING BASINS, OR SILT TRAPS ARE REQUIRED AS NEEDED FOR ALL EARTH CHANGES. BASINS AND TRAPS SHALL BE SIZED TO ENTIRELY CONTAIN SEDIMENT-LADEN RUNOFF. 6. ALL PUBLIC UTILITIES SHALL BE INSTALLED IN SUCH FASHION THAT SOIL EROSION AND SEDIMENTATION IS MINIMIZED.

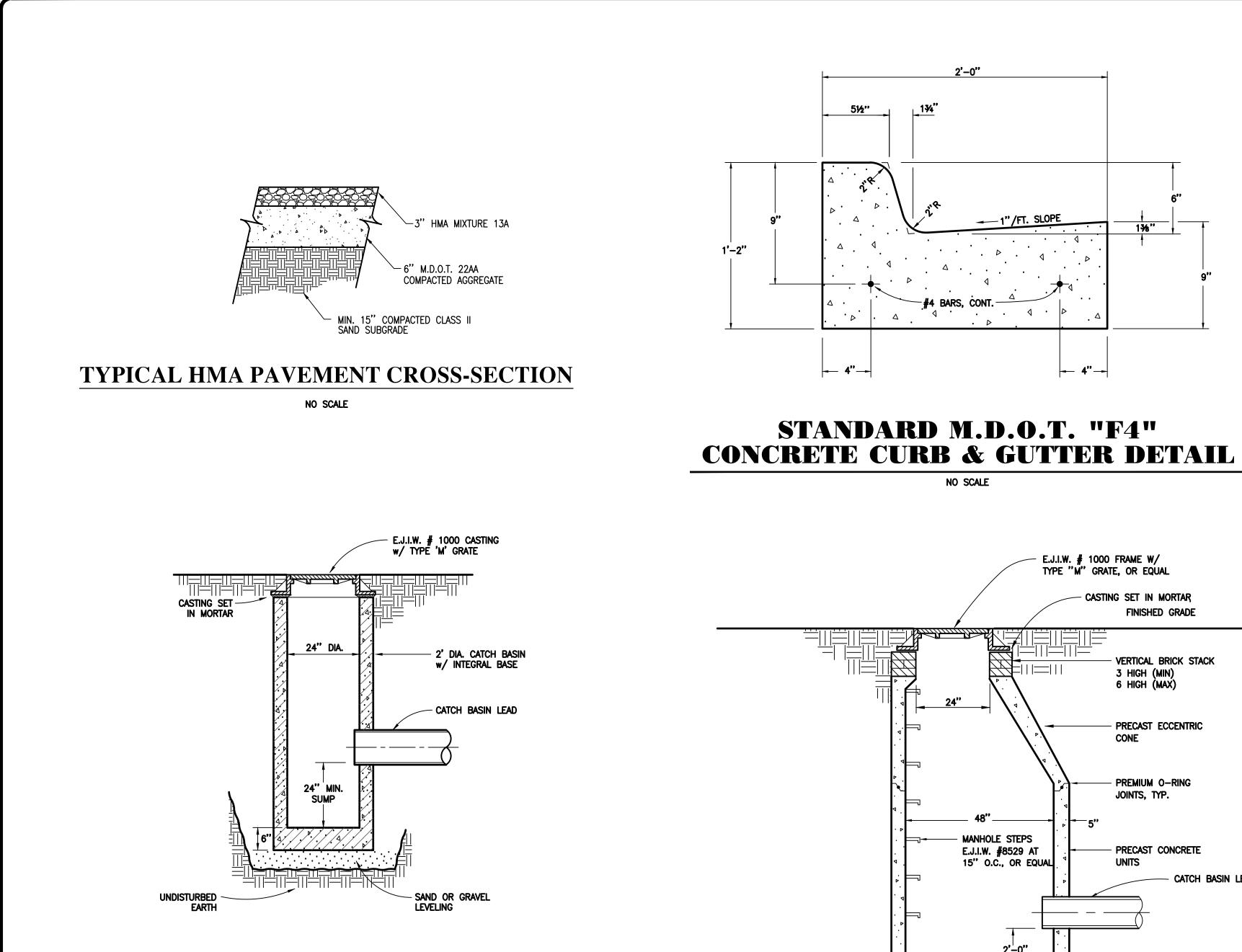
7. FILTER FENCES AND OTHER SOIL EROSION CONTROL FACILITIES INSTALLED AT THE PERIMETER OF A DEVELOPMENT SITE SHALL BE INSTALLED AT LEAST FIVE FEET FROM THE PROPERTY BOUNDARY TO ALLOW FOR ON-SITE MAINTENANCE.

8. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHEN SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED.

9. PERMANENT EROSION CONTROL MEASURE FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN FIFTEEN CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE ESTABLISHED.

10. SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE EARTH CHANGE, INCLUDING THE LATER STAGES OF DEVELOPMENT. MAINTENANCE ACTIVITIES INCLUDE, BUT ARE NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENT, STRUCTURAL REPAIRS, RE-SEEDING, REPLACEMENT OF VEGETATIVE COVER, AND LAWN MOWING.

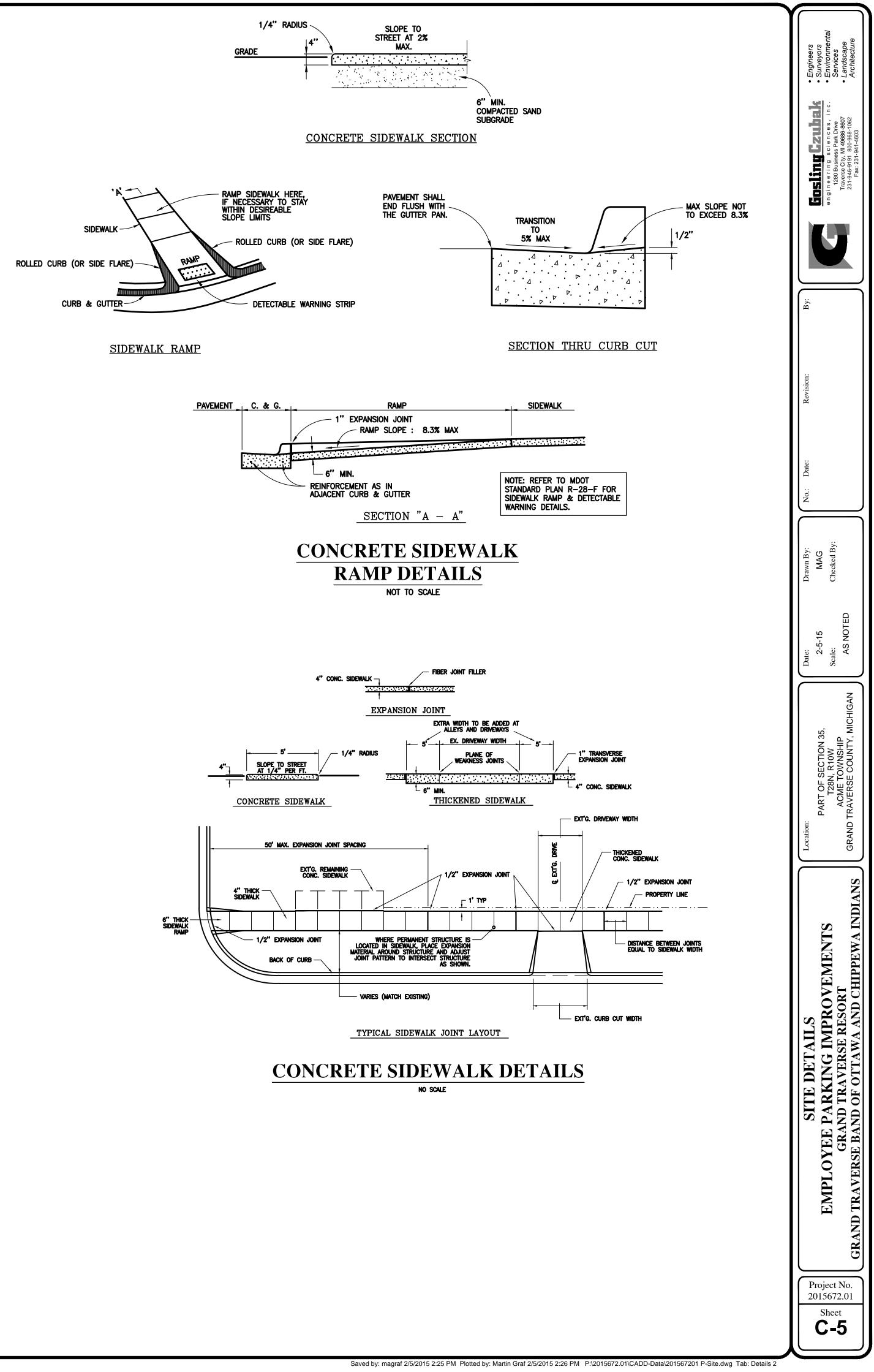




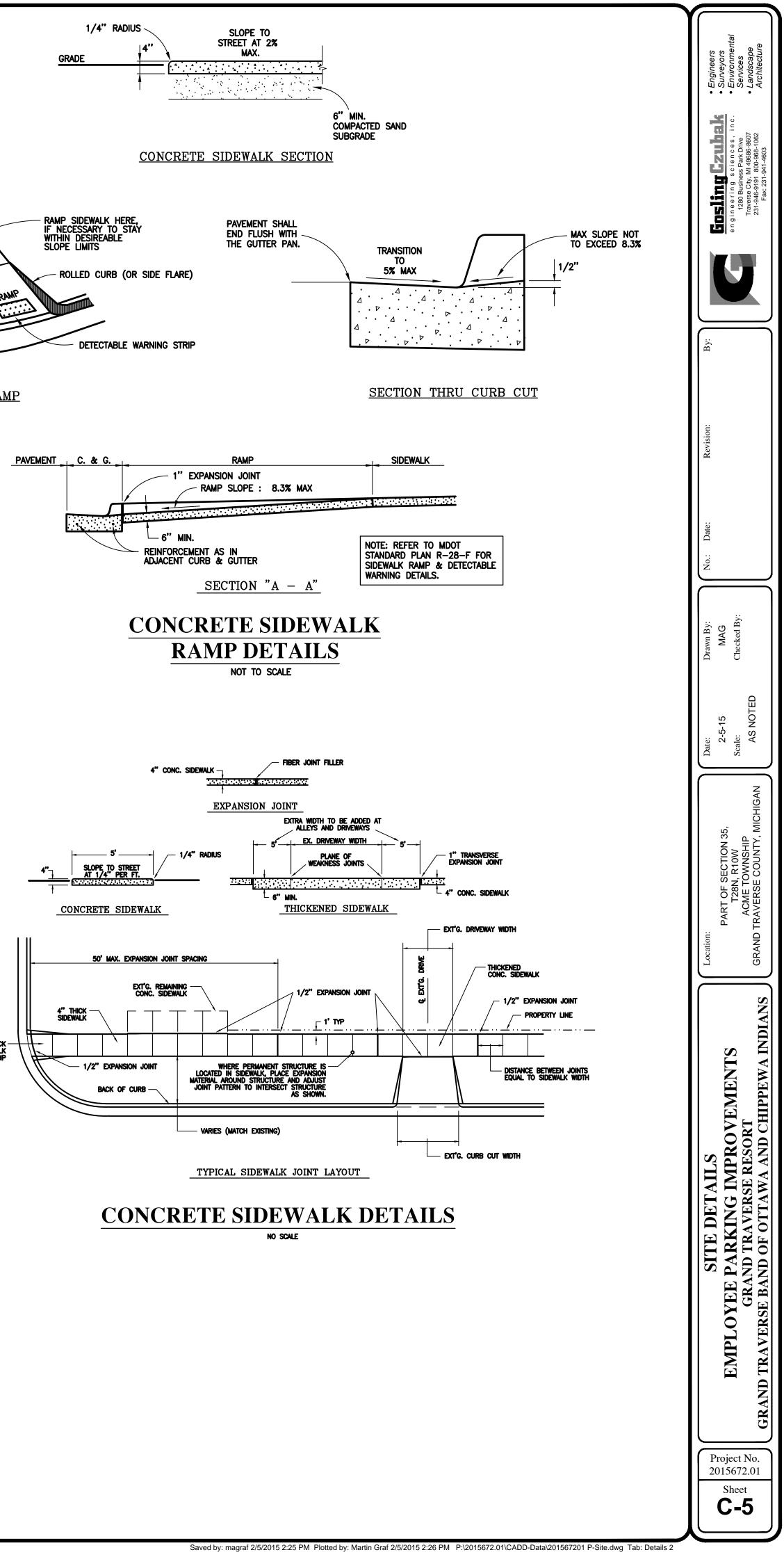
## **2 FT. DIAMETER** CATCH BASIN DETAIL

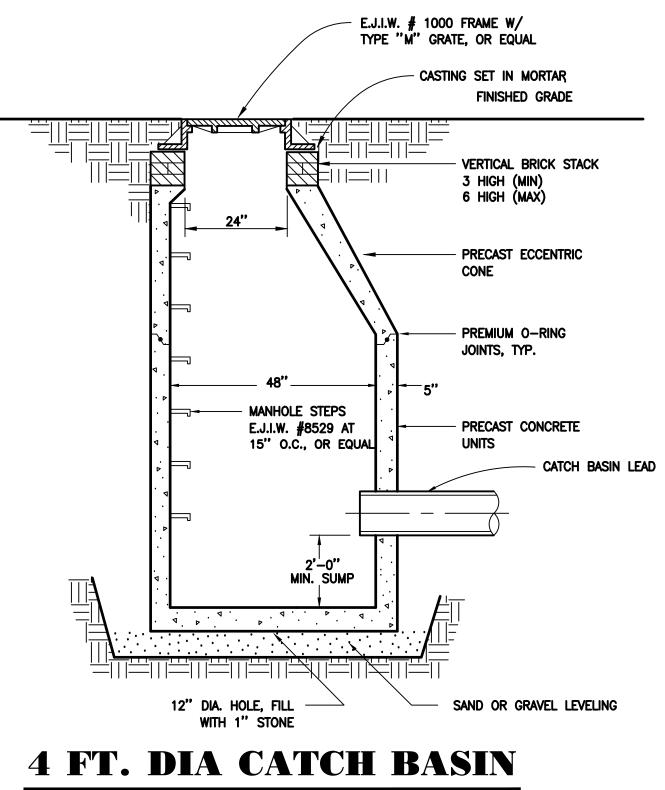
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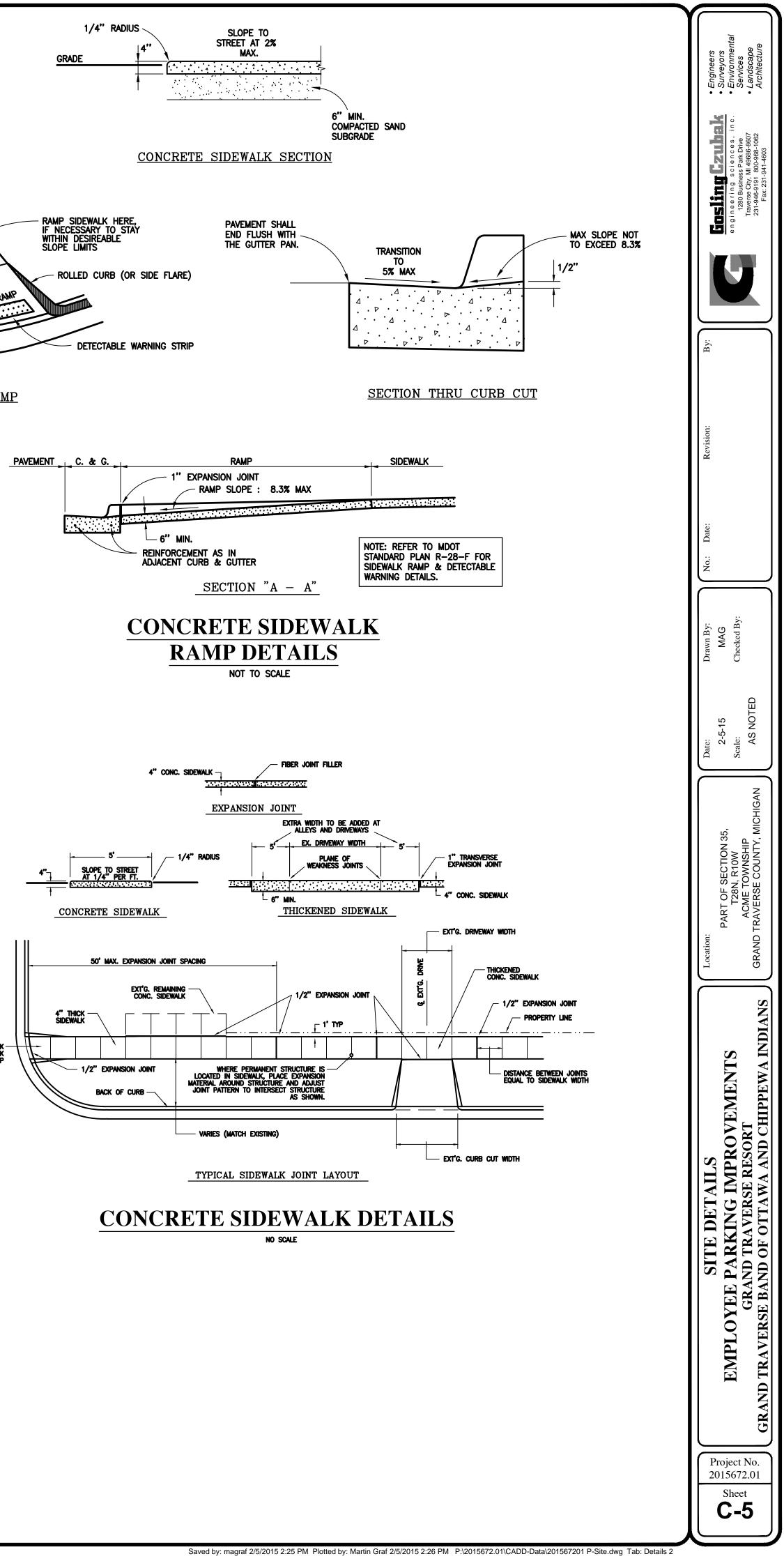
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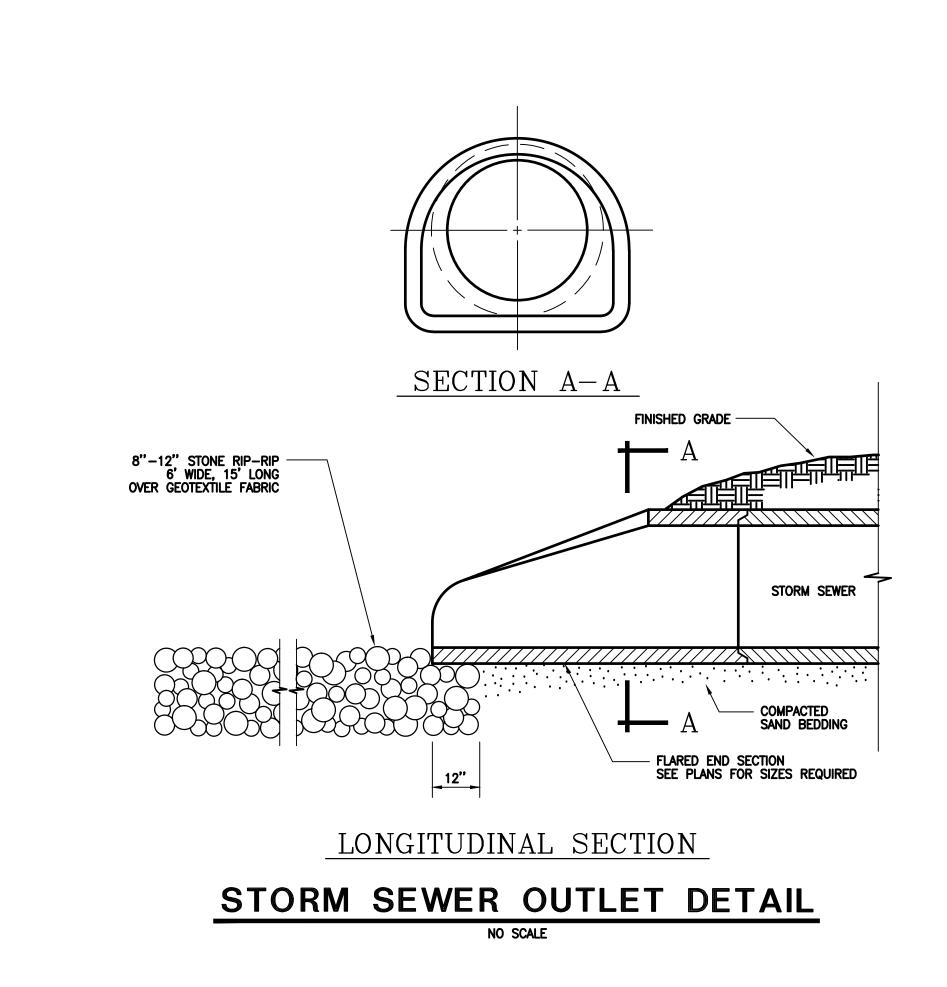
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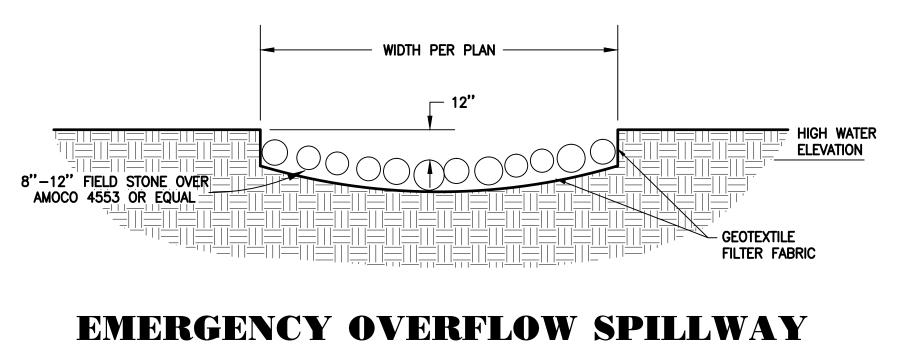
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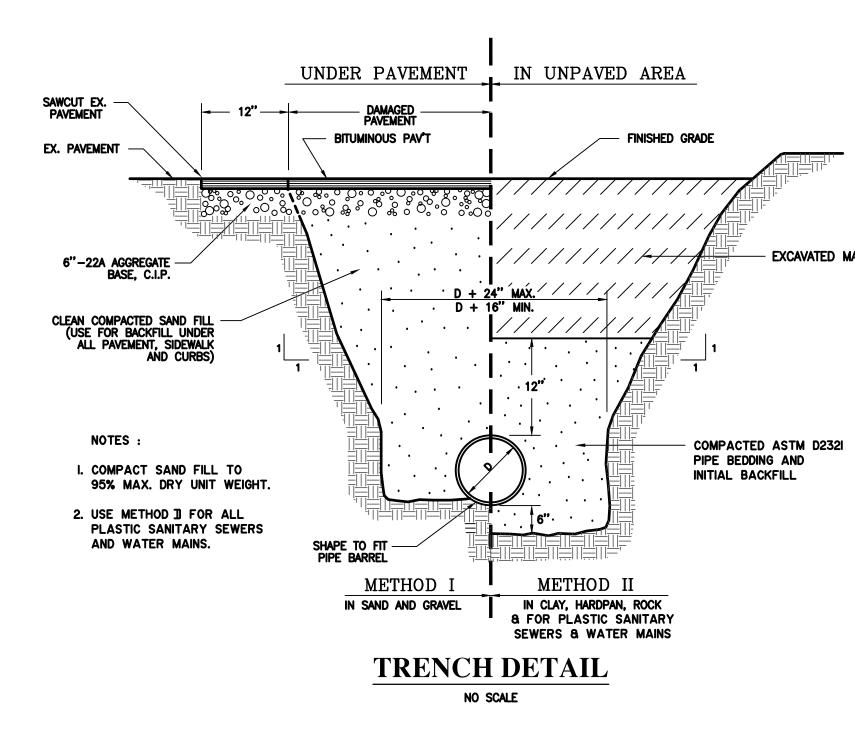


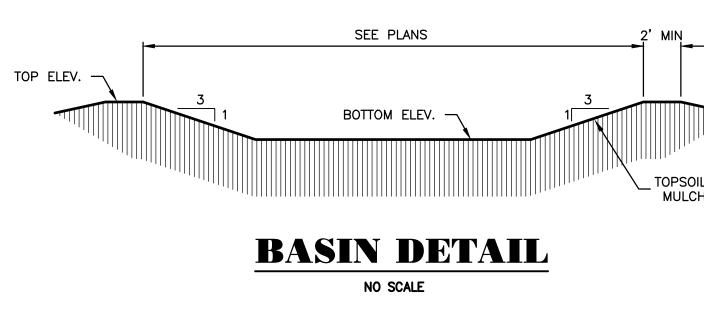


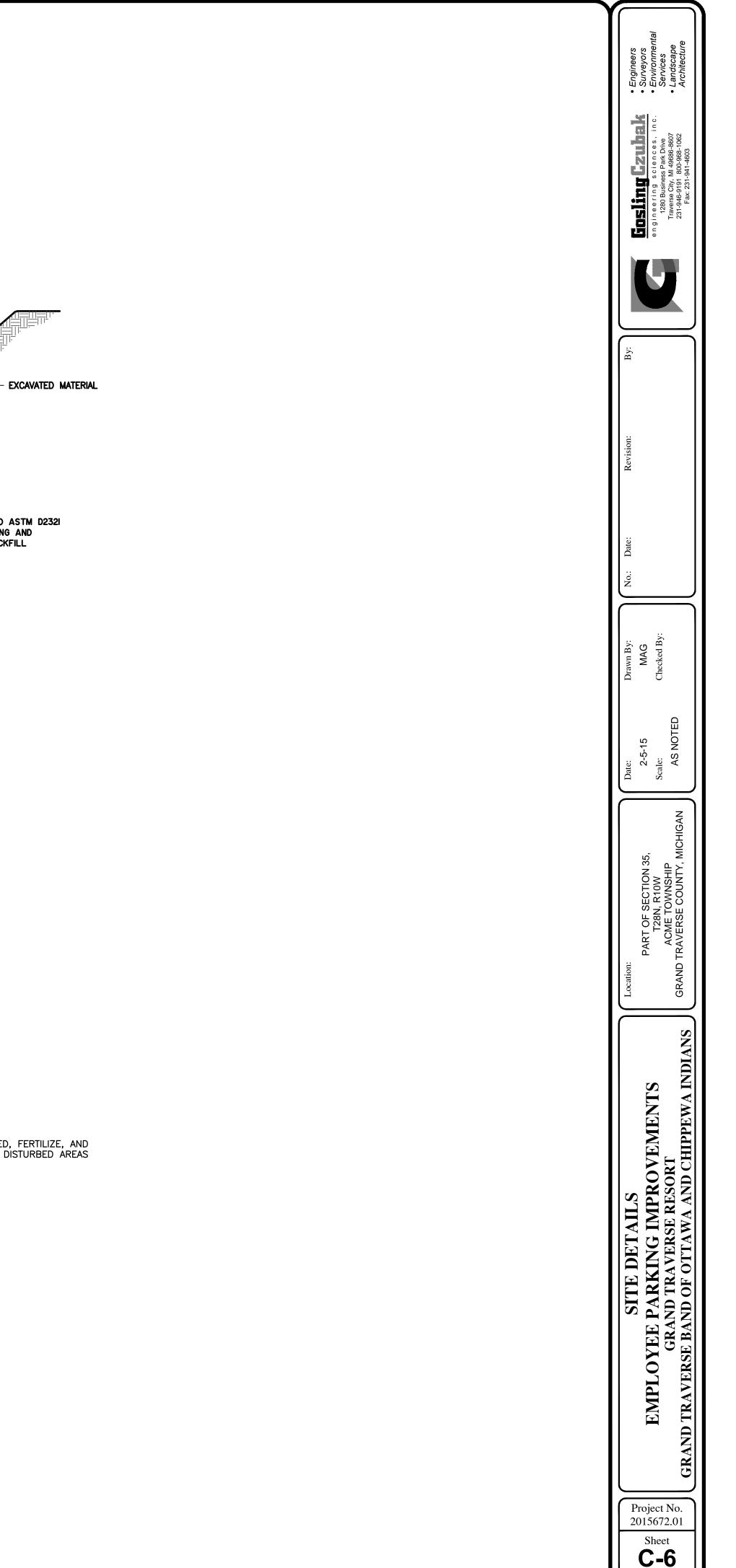




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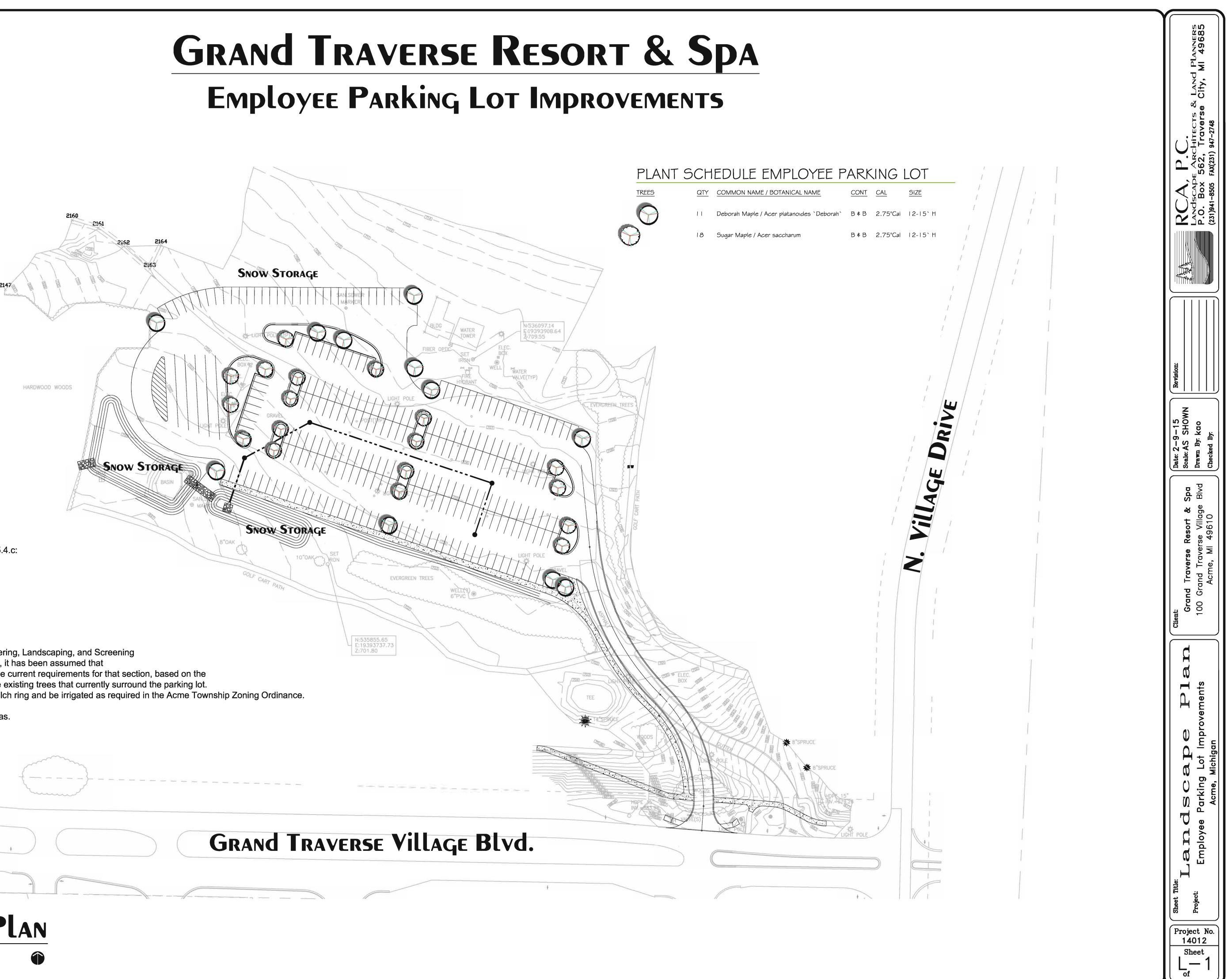






TOPSOIL, SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS

# Employee Parking Lot Improvements



# SITE DATA

As per Acme Township Ordinance Section 7.5.4.c:

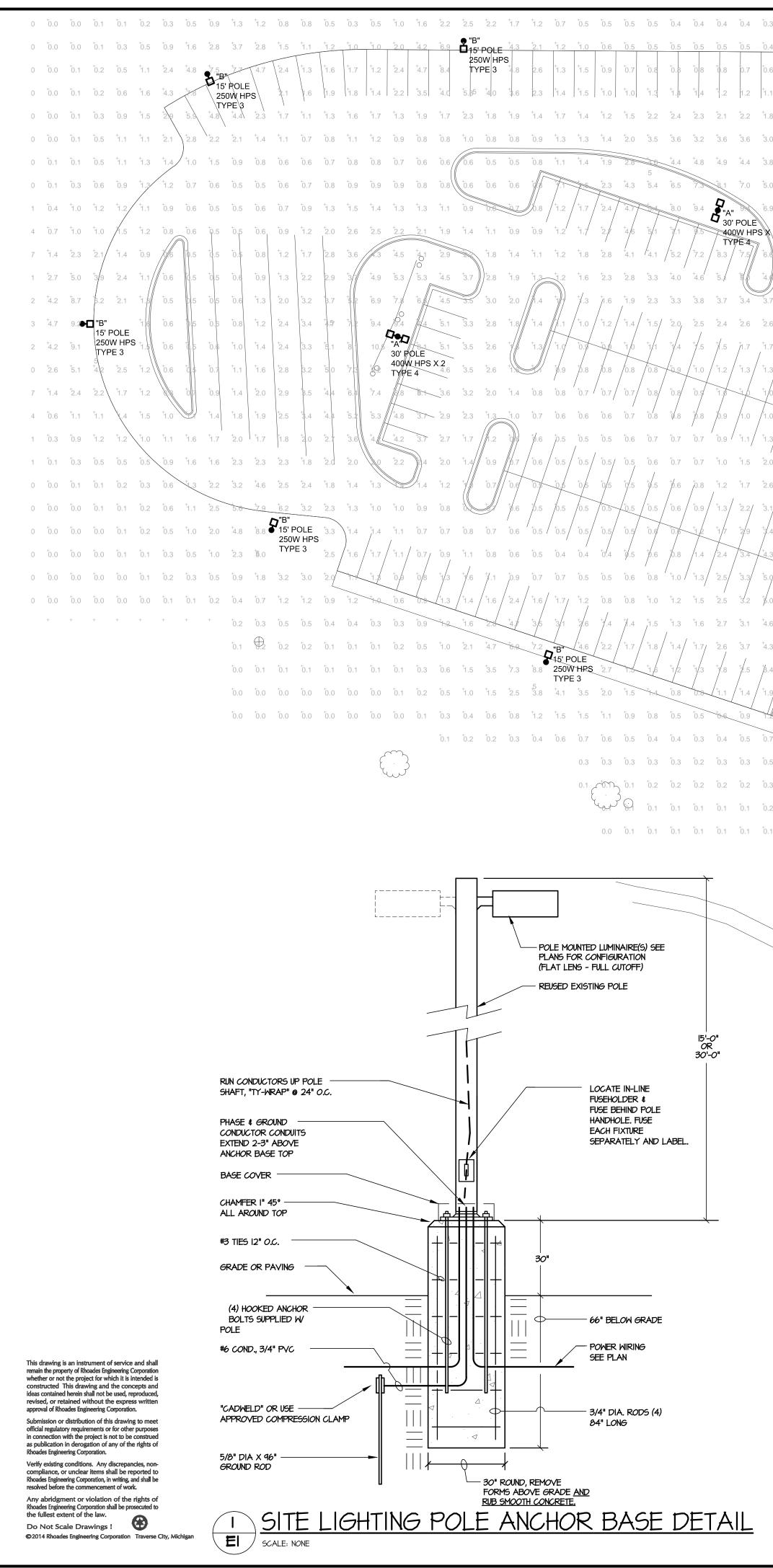
Required Trees = 26 Proposed Trees = 29

## Notes

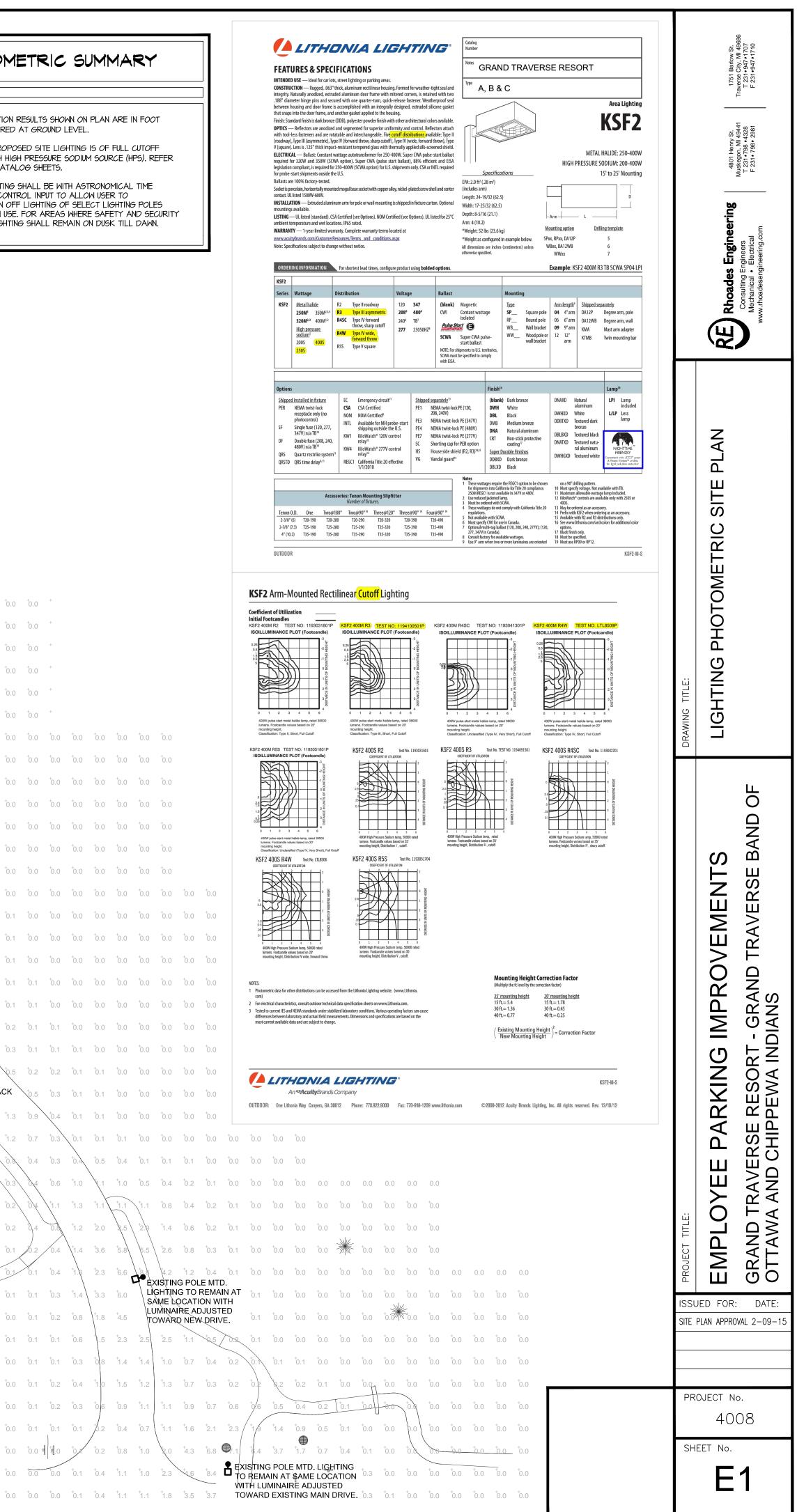
- In reviewing the Off-street Parking Area Buffering, Landscaping, and Screening ordinance for Acme Township, Section 7.5.4.c, it has been assumed that this proposal already meets and/or exceeds the current requirements for that section, based on the combination of distance from any road and the existing trees that currently surround the parking lot. - All proposed trees will have a 5' diameter mulch ring and be irrigated as required in the Acme Township Zoning Ordinance. - All disturbed areas shall be hydroseeded.

- Parking lot island are proposed to be turf areas.

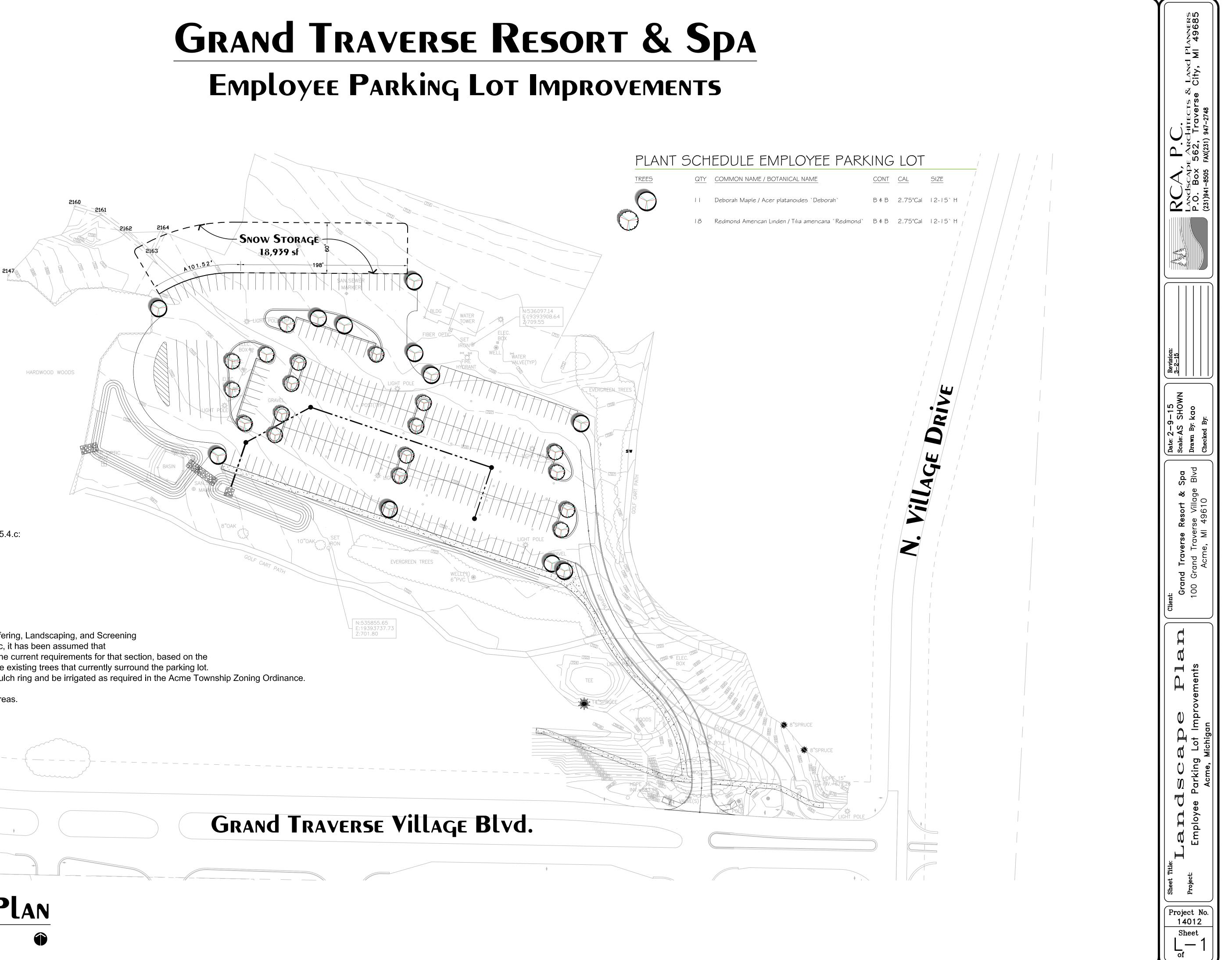
LANDSCAPE PLAN Scale: 1~=50 0' 25' 50'



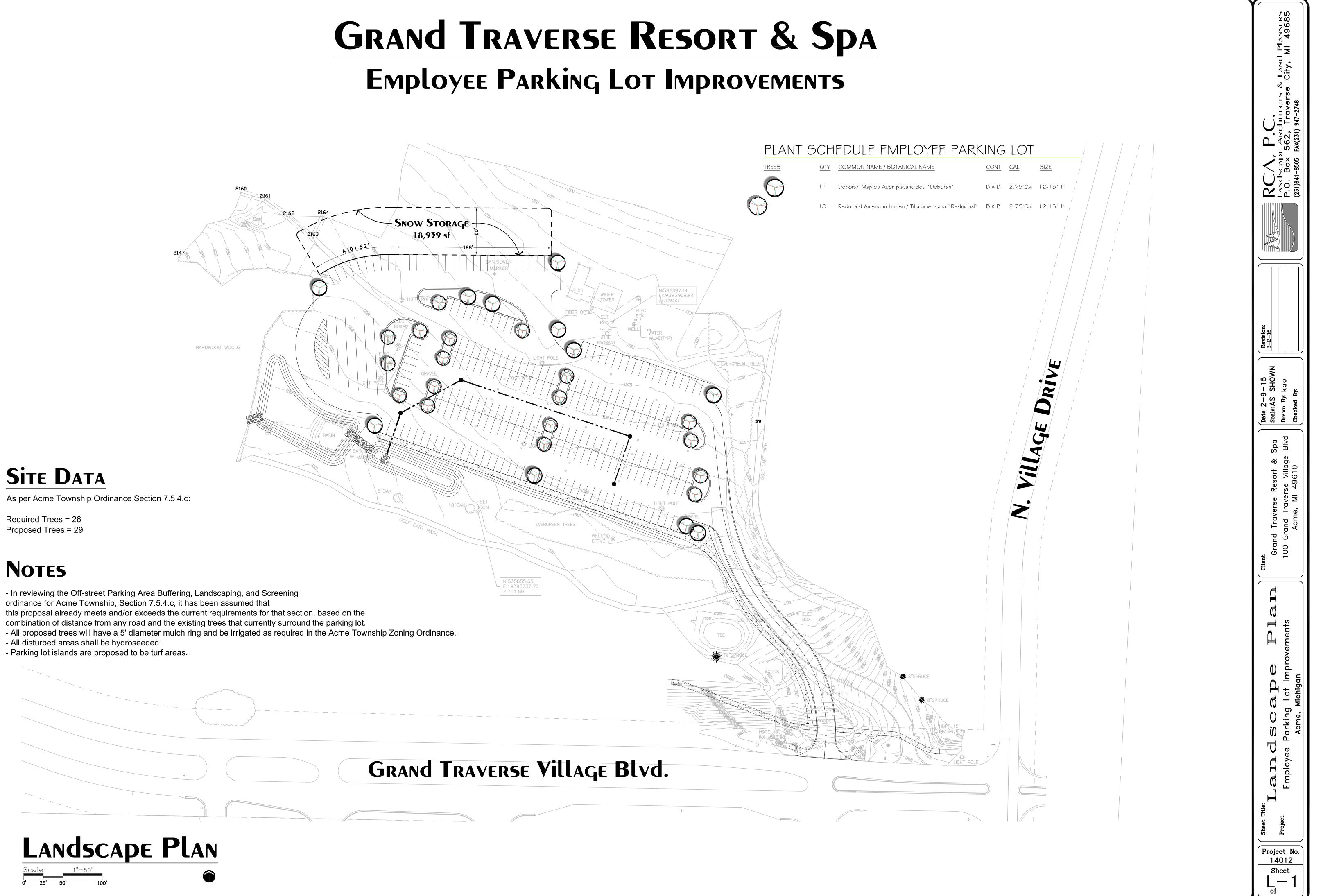
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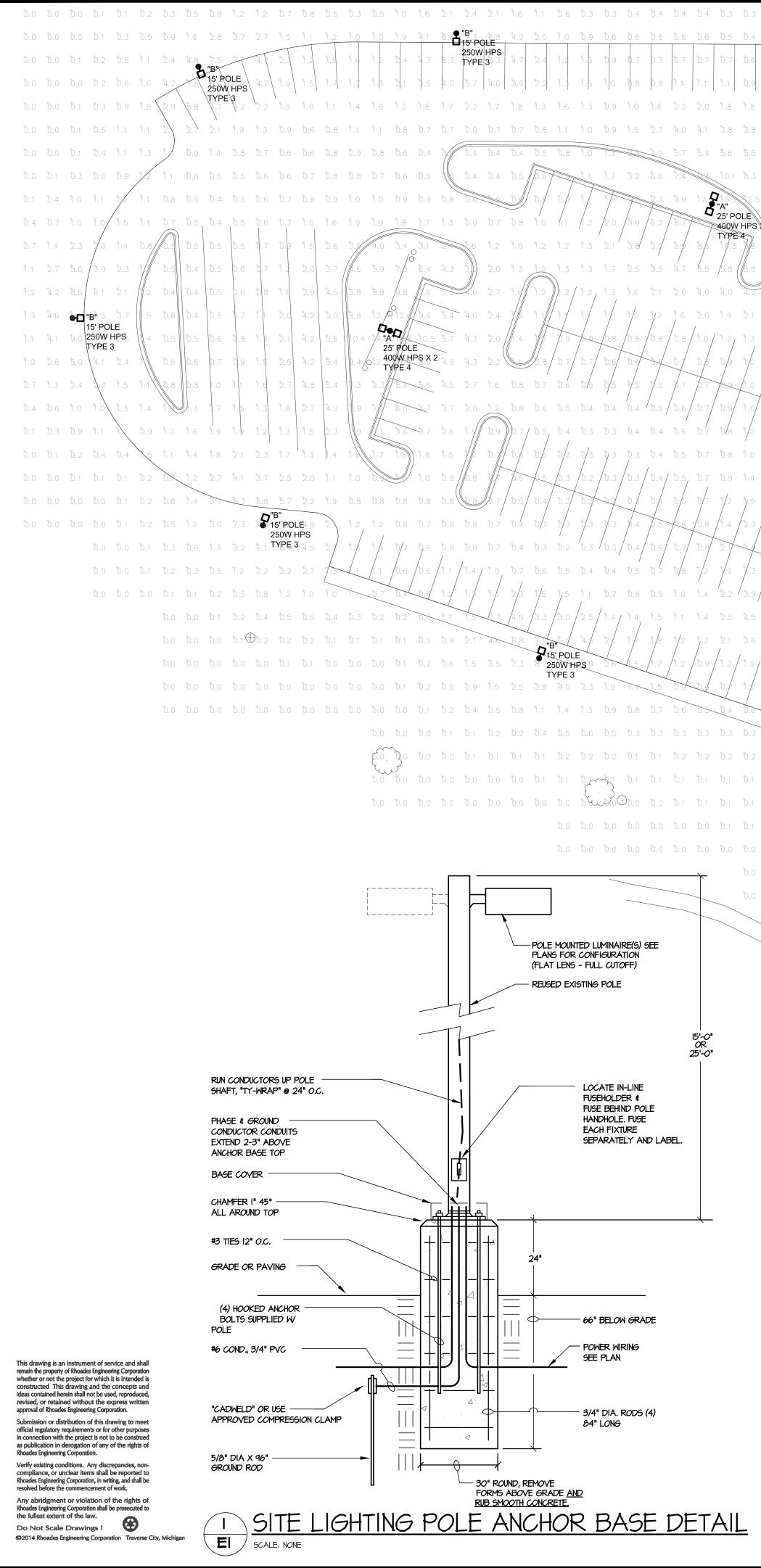


# Employee Parking Lot Improvements

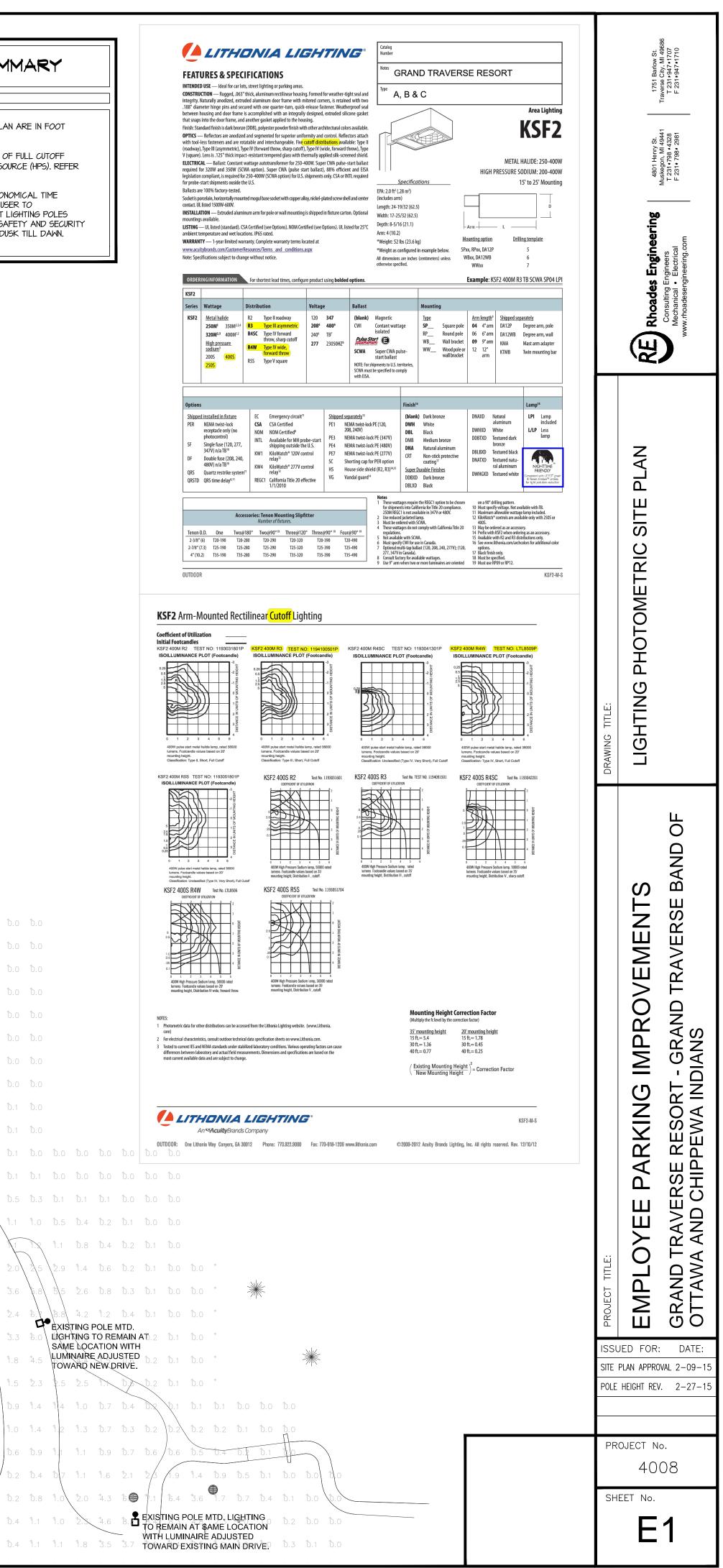


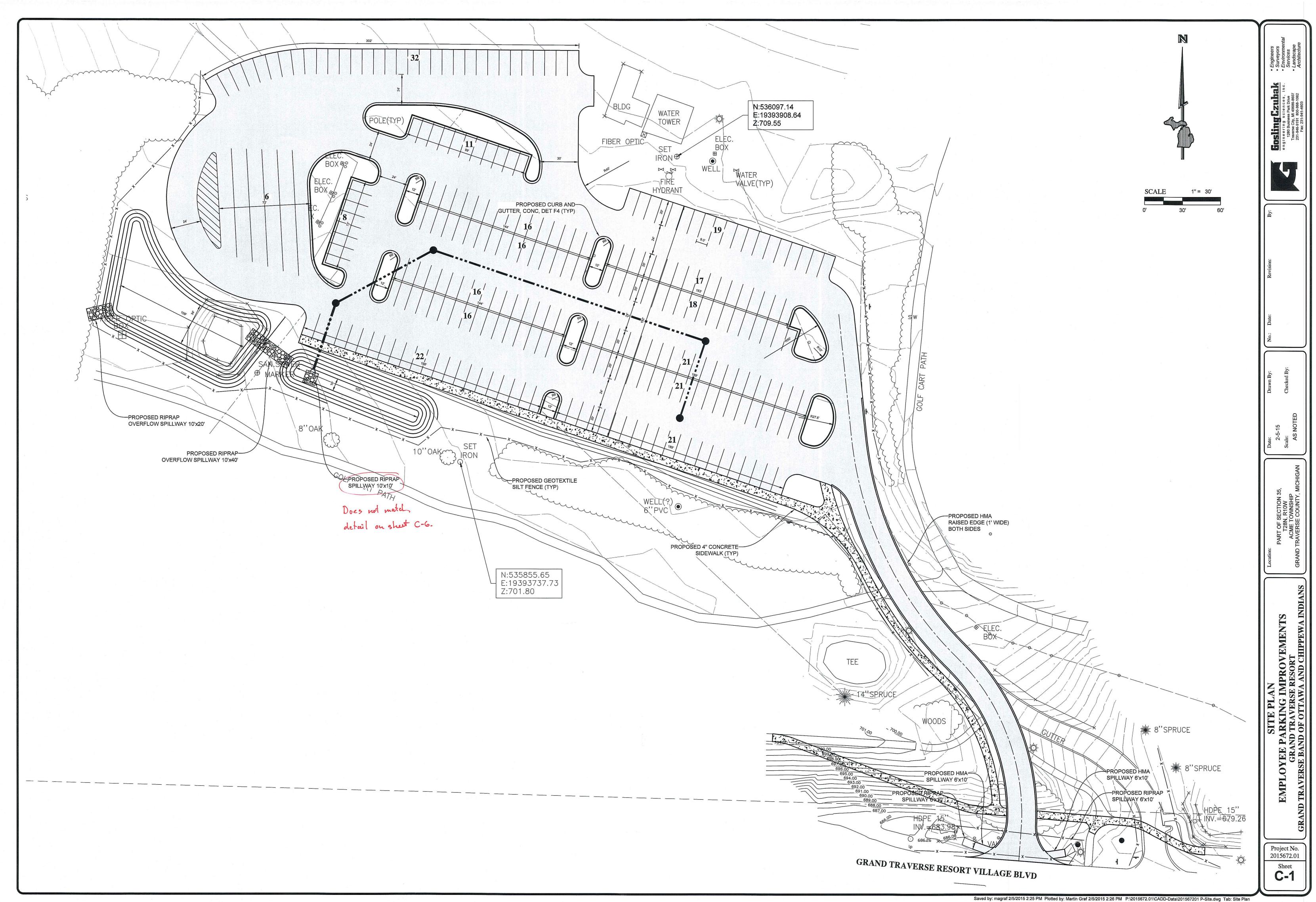
- In reviewing the Off-street Parking Area Buffering, Landscaping, and Screening ordinance for Acme Township, Section 7.5.4.c, it has been assumed that this proposal already meets and/or exceeds the current requirements for that section, based on the combination of distance from any road and the existing trees that currently surround the parking lot. - All disturbed areas shall be hydroseeded.



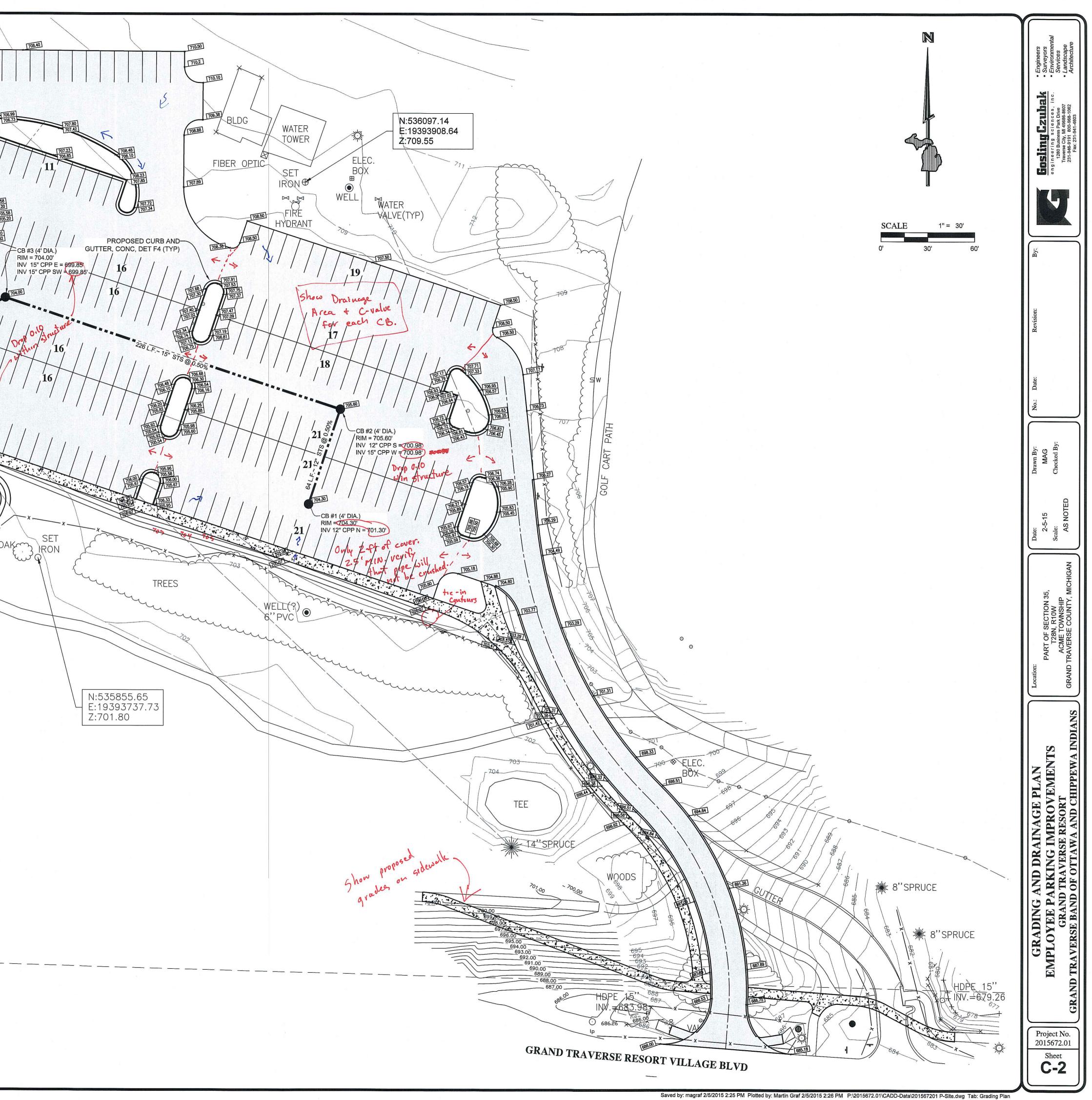


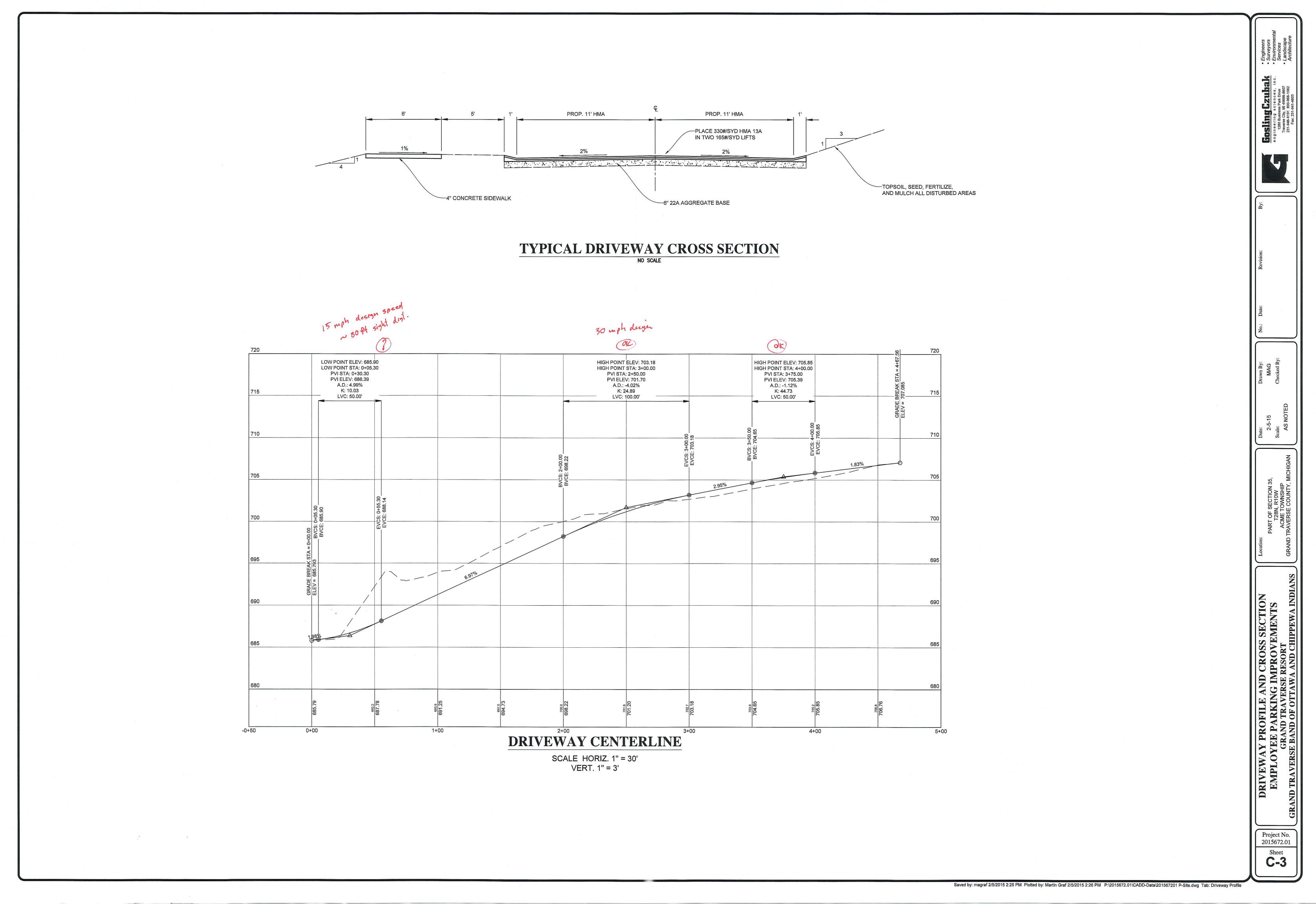
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8 1.4 1.1 5.8 5.7 5.6 5.5 5.4 5.2 5.1 5.1 5.0 8 2.4 1.9 1.4 5.9 5.7 5.6 5.5 5.3 5.2 5.1 5.0		I. UNITS OF CALCULATION RESULTS SHOWN ON PLAN A CANDLES (FC) MEASURED AT GROUND LEVEL. 2. NOTE THAT ALL PROPOSED SITE LIGHTING IS OF F
5     4.6     3.2     2.3     1.7     0.8     0.7     0.6     0.3     0.2     0.1     0.0     0.0       3     5.7     5.1     3.6     1.8     0.9     0.7     0.5     5.3     0.7     0.1     0.1     0.0     0.0		FLAT LENS TYPE WITH HIGH PRESSURE SODIUM SOURCE TO MANUFACTURER CATALOG SHEETS.
2.5 \$.6 \$.1 \$.9 \$.8 \$.9 \$.5 \$.4 \$.3 \$.2 \$1 \$.1 \$.1 \$.1	b.1     b.1     b.1     b.1     b.0     b.0       b.2     b.2     b.1     b.1     b.1     b.0     b.0     b.0     b.0	3. CONTROL OF LIGHTING SHALL BE WITH ASTRONOM CLOCK WITH PHOTO CONTROL INPUT TO ALLOW USER AUTOMATICALLY TURN OFF LIGHTING OF SELECT LIG WHEN AREA IS NOT IN USE. FOR AREAS WHERE SAFE
	$b. \textcircled{b}{0.2} \ b. 2 \ b. 2 \ b. 1 \ b. 0 \$	ARE OF CONCERN LIGHTING SHALL REMAIN ON DUSK
	b.6       b.6       b.5       b.4       b.3       b.2       b.1       b.1       b.1       b.0       b.0         1.1       1.4       1.3       1.0       b.8       b.6       b.4       b.3       b.2       b.2       b.1       b.1       b.1       b.0       b.0	
1 2.4 1.7 1.0 0.6 0.5 0.3 0.3 0.4 0.6 0.8 0.8 0.9 1.4	1.8 ¹ 2.9 ¹ 2.6 ¹ 2.4 ¹ 1.7 ¹ 1.1 ¹ 0.7 ¹ 0.5 ¹ 0.4 ¹ 0.3 ¹ 0.1 ¹ 0.1 ¹ 0.0 ¹ 0.0	
3 $1.3$ $1.1$ $5.8$ $5.7$ $5.5$ $5.3$ $5.4$ $5.4$ $5.4$ $5.4$ $5.4$ $5.4$ $5.4$ $5.4$ $5.4$ $5.4$ $5.4$ $5.5$ $5.8$ $1.2$ $1.0$ $1.3$ $1.9$		
	3.8 4.0 5.4 TYPE30 4.6 3.3 1.5 0.8 0.5 0.3 0.1 0.1 0.0	
	2.2 $2.8$ $3.0$ $4.3$ $4.7$ $5.1$ $2.8$ $1.6$ $0.8$ $0.6$ $0.4$ $0.2$ $0.1$ $0.01.2$ $1.9$ $2.1$ $2.6$ $3.4$ $3.4$ $1.8$ $1.7$ $0.9$ $0.7$ $0.6$ $0.3$ $0.1$ $0.0$ $0.0$	0.0 0.0
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6 5.1 7.1 7.6 6.4 4.8 7.0 2.2 1.4 1.0 6.9 1.0 to 1.2 9/ 2.6 3.7 4.5 5.2 5.0 3.1 1.8 1.2 6.9 6.9 6.9 1.1 1.4	2.3 3.9 5.7 7.9 19.6 9.8 6.7 5.6 3.1 1.6 0.9 0.7 0.5 0.3 0.2 1 2/6 5/3 8.9 1.7 14.5 1.8 1.3 14.9 2.8 1.5 0.9 0.6 0.5 0.3 0.2 1	
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	1.6     1.7     2.6     3.0     3.3     3.5     2.6     1.5     1.0     0.7     0.5     0.4     0.2     0.1     1       1.1     1.0     1.2     1.5     1.6     1.7     1.4     1.0     0.8     0.8     0.6     0.5     0.4     0.2     0.1     1	
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		p.6
t.o	b.o       b.o       b.o       b.o       b.1       b.1       b.3       b.6       1.5       4.3       250W HPS       4.7       2.2       1         TYPE 3       TYPE 3       TYPE 3       5.7       5.6       2.8       5.7       5.6       2.8       5.7	
	t.o	
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		D.0 b.0 b.0 b.1 b.1 b.2 b.4 b.8 1.3 2.0
	0.0 0.0 0	b.0     b.0     b.0     b.1     b.1     b.2     b.4     t.4     t.6       b.0     b.0     b.0     b.0     b.1     b.1     t.4     t.3     t.4
		b.o     b.o     b.o     b.o     b.1     b.1     b.3     \$4     \$3.3       b.o     b.o     b.o     b.o     b.1     b.1     b.2     \$8     \$1.8
		0.0     0.0     0.0     0.0     0.1     0.2     0.8     1.8       b.0     b.0     b.0     b.1     b.1     b.1     b.6     1.5
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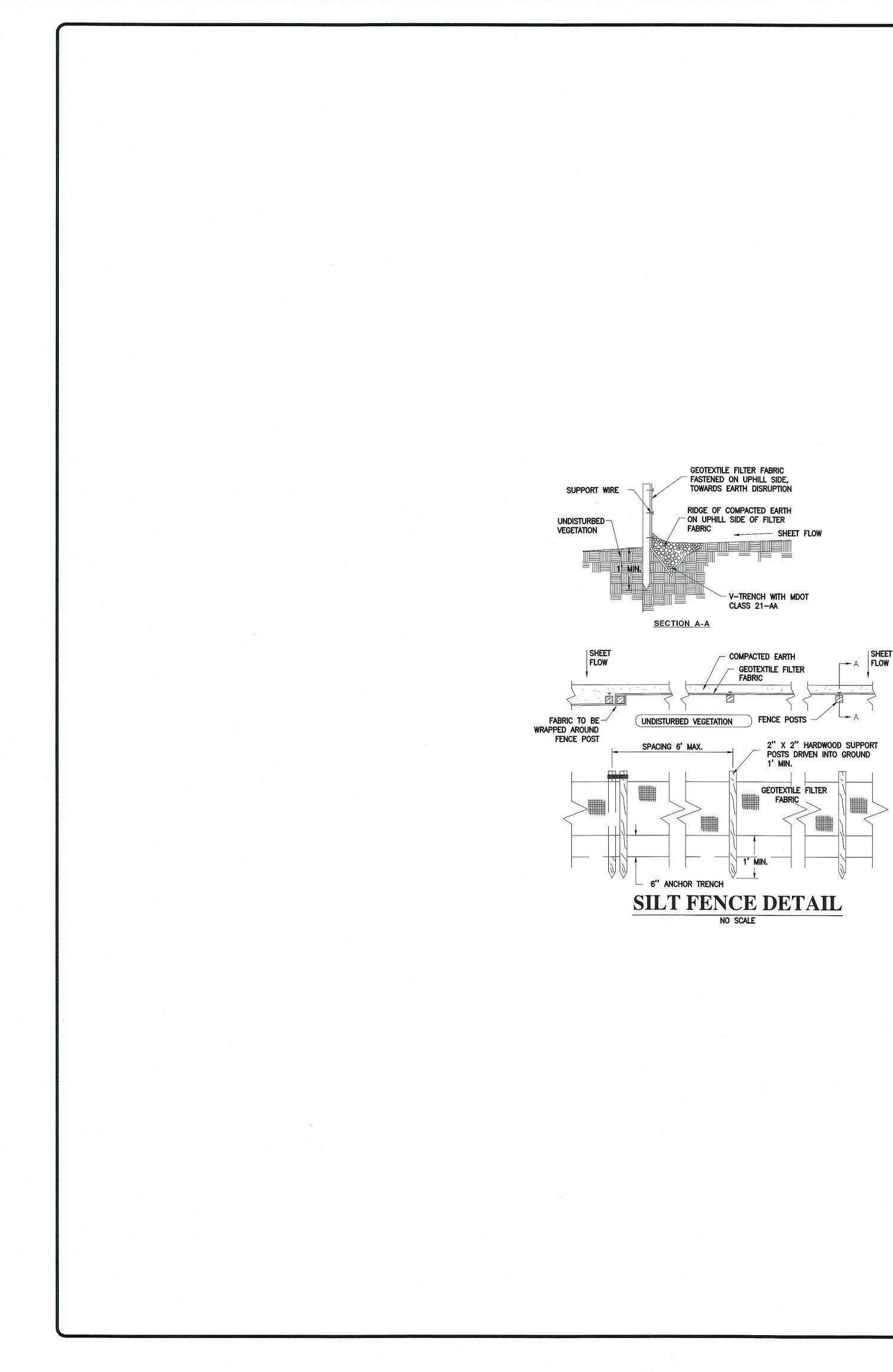




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S = 1000/CN - 10 Site Area identification (2yr) $Site Area identification Cover Type Soil Type Area (sft) (Acres) CN Superfile (N) Volume (cft) Existing Grown Parking Impervous A 8132 0.19 99 (0.2 × 1.864 + 1283 + 2700) (2.2 × 1.864 + 1283 + 2700) (2.2 × 1.864 + 1283 + 2487 + 1283 + 2700) (2.2 × 1.864 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 2487 + 1283 + 1283 + 2487 + 1283 + 2487 + 1283 + 1283 + 2487 + 1283 + 1283 + 2487 + 1283 + 1283 + 2487 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 1283 + 12$	<ul> <li>Calculations based on</li> </ul>	the Natural Resource							BOTTOM ELE DVERFLOW ELE VOLUME - 3	EV. = 697.0' _EV. = 699.0 3,446 CFT	1	
AreaQ. RunoffRunoffStill Area IdentificationCover TypeSoil TypeArea (sft)(Acres)CNS Depth (in.)Volume (cft)Existing Gravel ParkingImperviousA81320.19980.2 × 1.864 + 345 - 2700Existing Gravel ParkingImperviousA81320.19980.2 × 1.864 + 345 - 2700Depth (in.)ImperviousA488301.1225 × 30.0 × 0.586 + 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 345 - 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 2384 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 346 + 34	2 yr., 24 hr. Storm	Total Rainfall, P	Conservation Servation Servation 2.09 in		<u> </u> 	<u>Formulas</u> Runoff (in)=		) ² /(P+.8S)	BOTTOM ELE DVERFLOW EL VOLUME - 3	EV. = 697.0' _EV. = 699.0 3,446 CFT	1	
Existing Gravel Parking Impervious A 71687 1.65 98 $023.2$ 1.887.0492 111437 2700 Existing HMA Driveway Impervious A 2220 0.05 987 0.22 1.864 12345 Open/Grassed Pervious A 48830 1.12 257 30.0 0.586 23847 <b>Proposed Condition (25 yr)</b> <b>Site Area identification</b> Cover Type Soil Type Area (eff) (Acres) CN S Depth (in.) Volume (rft) dev. (cft) HMA Parking/Driveway Impervious A 116097 2.67 98.7 0.22 3.655 35365 35365 1797 (Sassed) Bervious A 8872 0.20 257 30.07 0.160 118 7 Total 130869 3.00 300 37280 22455 <b>Structural BMP Volume Reduction Calculations</b> Inflittation Rate = 1.0 influr Time = 24 hr Inflittation Rate = 1.0 influr Time = 24 hr Inflittation Rate = 1.0 influr Total 2056 cft $v \in V_{max} V_{wx}$ (log 16) Detention Basin 2 9256 cft $v \in V_{max} V_{wx}$ (log 16) Detention Basin 2 9256 cft $v \in V_{max} V_{wx}$ (log 16) Detention Basin 2 9256 cft $v \in V_{max} V_{wx}$ (log 16) Detention Basin 2 9256 cft $v \in V_{max} V_{wx}$ (log 16) Existing Storage 12.0 Existing Storage 12.0 Existing Storage optices to be exponded inter Defaulter. Beech 2. <b>Storage Volume Provided</b>	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm	Total Rainfall, P Total Rainfall, P	Conservation Servation Servation 2.09 in		j	<u>Formulas</u> Runoff (in)= Runoff Volur	me (cft )= 0 N - 10	) ² /(P+.8S) 0x 1/12xArea(s	BOTTOM ELE DVERFLOW EL VOLUME - 3	EV. = 697.0' _EV. = 699.0 3,446 CFT	1	
Existing Sidewalk Open/GrassedImperviousA2220 $0.05$ $98^{-1}$ $0.2^{-1}$ $1.664^{-1}$ $3.46^{-1}$ Open/GrassedPenviousA $48630$ $1.12$ $25^{-1}$ $30.0^{-1}$ $0.586^{-1}$ $2384^{-1}$ InterviousA $48630$ $1.12$ $25^{-1}$ $30.0^{-1}$ $0.586^{-1}$ $2384^{-1}$ Proposed Condition (25 yr)Soil TypeArea (sft)AreaSoil TypeArea (sft)RenoffRunoffVol2yr PreSoil TypeArea (sft)AreaOne of the second s	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr)	Total Rainfall, P Total Rainfall, P	<i>Conservation Ser</i> 2.09 in 3.89 in	vice Method.	Area	<u>Formulas</u> Runoff (in)= Runoff Volur S = 1000/Cl	me (cft )= 0 N - 10	) ² /(P+.8S) 0x 1/12xArea(s 76 <b>Q, Runoff</b>	BOTTOM ELE DVERFLOW EL VOLUME - 3 OLF CAR	EV. = 697.0' LEV. = 699.0 8,446 CFT	1	
Proposed Condition (25 yr)Site Area IdentificationCover TypeSoil TypeArea (sft)Area (sft)Area (sft)Area (sft)Q. RunoffNunoffVol 2yr PreSite valueImpenviousA 1160972.6798.//0.2/3.655.//3.655.//Site valueIMAR Parking/DrivewayImpenviousA 1160972.6798.//0.2/3.655.//3.655.//3.655.//ImpenviousA 88720.202.5 //3.05.//3.05.//3.05.//Situation CalculationsInfiltration Rate =1.0in/hrInfiltration Rate =1.0in/hr2.26cft2.25.//Other Market States of BMP x unit conversion)Detention Basin 12.056cft2.26.//cft2.27.//Storage Volume Required(=250//celspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2">Colspan="2"Colspan="2"Colspan="2"Colspan="	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway	Total Rainfall, P Total Rainfall, P <u>Cover Type</u> Impervious	Conservation Serve 2.09 in 3.89 in Soil Type A	vice Method. Area (sft) 71687 8132	Area (Acres) 1.65 0.19	$\frac{Formulas}{Runoff (in)} = Runoff Volur}{S = 1000/Cf}$ $\frac{CN}{98}$	me (cft )= 0 N - 10 S 02 3.2 0.2 ~	) ² /(P+.8S) 0x 1/12xArea(s 76 Q, Runoff Depth (in.) 1.864 -	BOTTOM ELE DVERFLOW EL VOLUME - 3 OLF CAR ft) ft) Runoff Volume (cft) 2 111433 1263 V	EV. = 697.0' LEV. = 699.0 3,446 CFT	1	
Area (Acres)Q. Runoff Depth (in.)RunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoffRunoff <th co<="" td=""><td>2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk</br></br></td><td>Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Impervious</td><td>Conservation Serve 2.09 in 3.89 in Soil Type A A A A</td><td>vice Method. Area (sft) 71687 8132 2220</td><td>Area (Acres) 1.65 0.19 0.05</td><td>$\frac{Formulas}{Runoff (in)} = Runoff Volur}{S = 1000/Cf}$ $\frac{ON}{98}$</td><td>me (cft )= 0 N - 10 S 0.2 3.2 0.2 4 0.2 4</td><td>)²/(P+.8S) 0x 1/12xArea(s 76 <b>Q, Runoff</b> Depth (in.) 1.864 ~ 1.864 ~</td><td>BOTTOM ELE DVERFLOW EL VOLUME - 3 OLF CAR ft) Runoff Volume (cft) 2 11133 1263 345</td><td>EV. = 697.0' LEV. = 699.0 3,446 CFT</td><td>1</td></th>	<td>2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk</br></br></td> <td>Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Impervious</td> <td>Conservation Serve 2.09 in 3.89 in Soil Type A A A A</td> <td>vice Method. Area (sft) 71687 8132 2220</td> <td>Area (Acres) 1.65 0.19 0.05</td> <td>$\frac{Formulas}{Runoff (in)} = Runoff Volur}{S = 1000/Cf}$ $\frac{ON}{98}$</td> <td>me (cft )= 0 N - 10 S 0.2 3.2 0.2 4 0.2 4</td> <td>)²/(P+.8S) 0x 1/12xArea(s 76 <b>Q, Runoff</b> Depth (in.) 1.864 ~ 1.864 ~</td> <td>BOTTOM ELE DVERFLOW EL VOLUME - 3 OLF CAR ft) Runoff Volume (cft) 2 11133 1263 345</td> <td>EV. = 697.0' LEV. = 699.0 3,446 CFT</td> <td>1</td>	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking 	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Impervious	Conservation Serve 2.09 in 3.89 in Soil Type A A A A	vice Method. Area (sft) 71687 8132 2220	Area (Acres) 1.65 0.19 0.05	$\frac{Formulas}{Runoff (in)} = Runoff Volur}{S = 1000/Cf}$ $\frac{ON}{98}$	me (cft )= 0 N - 10 S 0.2 3.2 0.2 4 0.2 4	) ² /(P+.8S) 0x 1/12xArea(s 76 <b>Q, Runoff</b> Depth (in.) 1.864 ~ 1.864 ~	BOTTOM ELE DVERFLOW EL VOLUME - 3 OLF CAR ft) Runoff Volume (cft) 2 11133 1263 345	EV. = 697.0' LEV. = 699.0 3,446 CFT	1
Site Area IdentificationCover TypeSoil TypeArea (sft)(Acres)CNSDepth (in.)Volume (cft)dev. (cft)HMA Parking/DrivewayImperviousA1160972.6798.40.2.43.655-35365-SidewalkImperviousA59000.1498.40.2.43.655-1797-Grassed/LandscapedPerviousA88720.2025.430.010.160-118-Total1308693.0037280-2215537280-22155Structural BMP Volume Reduction CalculationsInfiltration Rate =1.0in/hrTime =24hr-Infiltration rate x time x Area of Base of BMP x unit conversion)Detention Basin 12056oft $\sqrt{2.1/n.m.24m}$ (160 $\frac{1}{10}$ Detention Basin 29226oft $\sqrt{2.1/n.m.24m}$ (160 $\frac{1}{10}$ Storage Volume Required(=25yr post-dev volume - 2yr pre-dev volume - Infiltration volume)Existing Storage(2528)oft $\frac{21}{1340^4}$ Total13404^414,306	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Impervious	Conservation Serve 2.09 in 3.89 in Soil Type A A A A	vice Method. Area (sft) 71687 8132 2220 48830	Area (Acres) 1.65 0.19 0.05 1.12	$\frac{Formulas}{Runoff (in)} = Runoff Volur}{S = 1000/Cf}$ $\frac{ON}{98}$	me (cft )= 0 N - 10 S 0.2 3.2 0.2 4 0.2 4	) ² /(P+.8S) 0x 1/12xArea(s 76 <b>Q, Runoff</b> Depth (in.) 1.864 ~ 1.864 ~	BOTTOM ELE DVERFLOW EI VOLUME - 3 OLF CAR ft) Runoff Volume (cft) 2 11133 1263 345 2384	EV. = 697.0' LEV. = 699.0 3,446 CFT	1	
Sidewalk Grassed/LandscapedImperviousA59000.1498/ 25/0.2/ 25/3.655/ 30.0/1797/ 118Total1308693.0037280/30,555Structural BMP Volume Reduction CalculationsInfiltration Rate =1.0in/hrTime =24hrInfiltration Volume Detention Basin 12056cft $\checkmark \approx 1/nx$ 24 $\times$ (log $\times^{10}$ )Detention Basin 29226cft $\checkmark \approx 1/nx$ 24 $\times$ 4616 4/-TotalStorage Volume Required 10873C=25yr post-dev volume - 2yr pre-dev volume - Infiltration volume)10873cft $\Rightarrow$ 19,306Existing StorageTotal13407Infiltration Provided	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Impervious Pervious	Conservation Serve 2.09 in 3.89 in Soil Type A A A A	vice Method. Area (sft) 71687 8132 2220 48830	Area (Acres) 1.65 0.19 0.05 1.12 3.00	$\frac{Formulas}{Runoff (in)} = Runoff Volur}{S = 1000/Cf}$ $\frac{ON}{98}$	me (cft )= 0 N - 10 S 0.2 3.2 0.2 4 0.2 4	) ² /(P+.8S) 0x 1/12xArea(s 76 <b>Q, Runoff</b> Depth (in.) 1.864 - 1.864 - 1.864 - 0.586	BOTTOM ELE DVERFLOW EL VOLUME - 3 OLF CAR ft) Runoff Volume (cft) 2 11133 1263 345 2384 15125	EV. = 697.0' LEV. = 699.0 3,446 CFT		
Total1308693.00 $37280^{4}$ $30, 538^{5}$ Structural BMP Volume Reduction CalculationsInfiltration Rate =1.0in/hrTime =24hr- Infiltration rate x time x Area of Base of BMP x unit conversion)Detention Basin 12056cft $\sqrt{2}$ Detention Basin 29226cft $\sqrt{2}$ Total11282 $$ Storage Volume Required(=25yr post-dev volume - 1nfiltration volume)10873cft $\Rightarrow$ 19,306Existing Storage(=25yr post-dev volume - 2yr pre-dev volume)10873cft $\Rightarrow$ 19,306Existing Storage(=25yr post-dev volume - 2yr pre-dev volume)10873cft $\Rightarrow$ 19,306Existing Storage(=25yr post-dev volume - 2yr pre-dev volume)1340719,306Existing Storage(=25yr post-dev volume - 2yr pre-dev volume - 1nfiltration volume)10873cft $\Rightarrow$ 19,306Existing Storage(=25yr post-dev volume - 2yr pre-dev volume - 1nfiltration volume)10873cft $\Rightarrow$ 19,306Existing Storage(=25yr post-dev volume - 2yr pre-dev volume - 1nfiltration volume)1340719,306Storage Volume Provided(=25yr post-dev volume - 2yr pre-dev volume - 2yr pr	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed Proposed Condition (25 Site Area Identification	Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Impervious Pervious Pervious	Conservation Serve 2.09 in 3.89 in Soil Type A A A A A Soil Type	vice Method. Area (sft) 71687 8132 2220 48830 130869 Area (sft)	Area (Acres) 1.65 0.19 0.05 1.12 3.00 Area (Acres)	$\frac{Formulas}{Runoff (in)=}$ $Runoff Volur$ $S = 1000/Ct$ $98$ $98^{\prime}$ $98^{\prime}$ $25^{\prime}$ $CN$	me (cft )= 0 N - 10 S 0.2 - 0.2 - 30.0 -	) ² /(P+.8S) 0x 1/12xArea(s 76 Q, Runoff Depth (in.) 1.864 - 1.864 - 0.586 Q, Runoff Depth (in.)	BOTTOM ELE DVERFLOW EI VOLUME - 3 OLF CAR ft) Runoff Volume (cft) 2 11133 1263 345 2384 15125 Runoff Volume (cft)	EV. = 697.0' LEV. = 699.0 3,446 CFT DT PATA PATA 6669 Z. Vol 2yr	Pre	
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Storage Volume Required       (=25yr post-dev volume - 2yr pre-dev volume - Infiltration volume)         Existing Storage       10873       cft       9       19,306         Existing Storage       2528       cft       ?       Existing storage appears to be expanded into Defentron Basin 2.         Total       13401       19,306         Storage Volume Provided       19,306	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed Proposed Condition (25 Site Area Identification HMA Parking/Driveway Sidewalk Grassed/Landscaped Total Structural BMP Volume Infiltration Rate =	Total Rainfall, P Total Rainfall, P Total Rainfall, P <u>Cover Type</u> Impervious Impervious Pervious Pervious Impervious Pervious Impervious Impervious Impervious Pervious Pervious 1.0	Conservation Server 2.09 in 3.89 in Soil Type A A A A A A A A A A A A	vice Method. Area (sft) 71687 8132 2220 48830 130869 130869 Area (sft) 116097 5900 8872	Area (Acres) 1.65 0.19 0.05 1.12 3.00 Area (Acres) 2.67 0.14 0.20	Formulas Runoff (in)= Runoff Volur S = 1000/Cf O(1) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(2) O(	me (cft )= 0 N - 10 S 0.2 - 0.2 - 30.0 - S 0.2 - 0.2 - 0.2 - 0.2 - 0.2 -	) ² /(P+.8S) 0x 1/12xArea(s 76 <b>Q, Runoff</b> Depth (in.) 1.864 - 1.864 - 1.864 - 0.586 <b>Q, Runoff</b> Depth (in.) 3.655 - 3.655 -	BOTTOM ELE DVERFLOW EI VOLUME - 3 OLF CAR ft) Runoff Volume (cft) 2 11133 1263 345 2384 15125 Runoff Volume (cft) 35365 1797 118	EV. = 697.0' EV. = 699.0 8,446 CFT PT PATA PATA Vol 2yr dev. (cf	Pre t)	
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Detention Basin 2 11378 🗸 🙀 🖷	2 yr., 24 hr. Storm 25 yr., 24 hr. Storm Existing Condition (2yr) Site Area Identification Existing Gravel Parking Existing HMA Driveway Existing Sidewalk Open/Grassed Proposed Condition (25 Site Area Identification HMA Parking/Driveway Sidewalk Grassed/Landscaped Total Structural BMP Volume Infiltration Rate = Time = Infiltration Basin 1 Detention Basin 2 Total Storage Volume Required Existing Storage Total	Total Rainfall, P Total Rainfall, P Total Rainfall, P Cover Type Impervious Impervious Pervious Pervious Pervious Pervious Pervious Pervious Pervious Pervious Pervious Pervious Pervious Pervious Pervious 1.0 24 (=Infiltration rate x t 2056 9226 11282 √ (=25yr post-dev 10873 2528 13401	Conservation Serve 2.09 in 3.89 in Soil Type A A A A A A A A A A A A A	vice Method. Area (sft) 71687 8132 2220 48830 130869 Area (sft) 116097 5900 8872 130869 Se of BMP x unit 24 x (10 y x 10) 24 x 4616 4/-	Area (Acres) 1.65 0.19 0.05 1.12 3.00 Area (Acres) 2.67 0.14 0.20 3.00 3.00	Formulas Runoff (in)= Runoff Volur S = 1000/Cl 98 98 25 CN 98 25 25 25	me (cft )= 0 N - 10 S 0.2 ~ 0.2 ~ 30.0 ~	) ² /(P+.8S) )x 1/12xArea(s 76 <b>Q, Runoff</b> Depth (in.) 1.864 - 1.864 - 1.864 - 0.586 - <b>Q, Runoff</b> Depth (in.) 3.655 - 3.655 - 0.160 -	BOTTOM ELE DVERFLOW EI VOLUME - 3 OLF CAR TOLINE (Cft) 2 11193 1263 - 345 2384 15125 Runoff Volume (cft) 35365 - 1797 - 118 37280	EV. = 697.0' EV. = 699.0 3,446 CFT DT PATA PATA Vol 2yr dev. (cf 30, 58 22155	Pre t)	







## SOIL EROSION CONTROL NOTES

#### **General Erosion Control Notes**

SOIL EROSION AND SEDIMENTATION CONTROL SHALL PROTECT AGAINST LOSS OF SOIL BY THE ACTION OF WATER, ICE AND GRAVITY OF WIND.

#### **Summary of Basic Principles**

1. KEEP DISTURBED AREA AS SMALL AS POSSIBLE AT ALL TIMES.

2. STABILIZE AND/OR PROTECT DISTURBED AREAS AS SOON AS POSSIBLE FOLLOWING CONSTRUCTION ACTIVITIES IN THAT AREA..

3. KEEP STORM WATER RUNOFF VELOCITIES LOW.

4. RETAIN SEDIMENT WITHIN IMMEDIATE CONSTRUCTION AREA.

THE PURPOSE OF THIS PLAN IS TO SPECIFY METHODS FOR TEMPORARY EROSION CONTROL DURING CONSTRUCTION.

ALL SOIL EROSION AND SEDIMENTATION CONTROL DEVICES SHALL BE REGULARLY MAINTAINED BY THE CONTRACTOR THROUGHOUT THE DURATION OF THE PROJECT. COLLECTED SILT AND SEDIMENTATION SHALL BE REMOVED AS REQUIRED TO MAINTAIN THE EFFECTIVENESS OF THE SILT TRAPS OR SEDIMENTATION CONTROL DEVICES. IN SILT FENCE APPLICATIONS SEDIMENT SHALL BE REMOVED WHEN THE HEIGHT REACHES ONE HALF THE HEIGHT OF THE FABRIC. WHERE REQUIRED THE CONTRACTOR SHALL REPLACE FILTER MATERIALS WHICH HAVE BECOME INEFFECTIVE DUE TO CONTAMINATION OR PHYSICAL DETERIORATION. THE CONTRACTOR SHALL INSPECT ALL SOIL EROSION AND SEDIMENTATION CONTROL DEVICES AFTER ALL STORM EVENTS.

ALL TEMPORARY EROSION CONTROL FACILITIES SHOULD BE REMOVED BY THE CONTRACTOR AT THE COMPLETION OF CONSTRUCTION UNLESS ORDERED BY THE ENGINEER TO BE LEFT IN PLACE. CARE SHOULD BE TAKEN DURING REMOVAL TO MINIMIZE SILTATION IN NEARBY DRAINAGE COURSES.

SURFACE DISRUPTION IN ADVANCE OF CONSTRUCTION INCLUDING GRADING, CLEARING OR SIGNIFICANT SOD REMOVAL SHALL BE LIMITED AS FOLLOWS,

UNLESS PERMISSION IS OTHERWISE OBTAINED FROM THE GOVERNING AGENCY.

A. WET WEATHER SEASON (MARCH, APRIL, MAY) - 5 DAYS PRIOR TO BEGINNING ANY EARTH CHANGE ACTIVITY.

B. DRY WEATHER SEASON (JUNE TO NOVEMBER) - 10 DAYS

C. COLD WEATHER SEASON (DECEMBER, JANUARY, FEBRUARY) - 15 DAYS PRIOR TO BEGINNING ANY EARTH CHANGE ACTIVITY.

#### **Location Of Stockpiles**

PRIOR TO BEGINNING ANY EARTHWORK.

THE CONTRACTOR SHALL LOCATE STOCKPILES AS DIRECTED BY THE CONSTRUCTION MANAGER PER OWNER/ENGINEER OR AS SHOWN ON PLANS.

#### **Temporary Facilities**

SOIL EROSION AND SEDIMENTATION CONTROL

THE CONTRACTOR SHALL FOLLOW THE PROCEDURES DELINEATED BELOW AND CONSTRUCT AND MAINTAIN THE FACILITIES SHOWN ON THE DRAWINGS TO CONTROL WATER AND WIND EROSION DURING CONSTRUCTION OF THE PROJECT. THE CONTRACTOR SHALL IMPLEMENT ANY ADDITIONAL MEASURES, NOT SHOWN ON THE PLANS, NECESSARY TO MINIMIZE SOIL EROSION AND SEDIMENTATION.

ALL DISTURBED SURFACE AREAS (INCLUDING UTILITY TRENCHES) SHALL BE TEMPORARILY GRADED AND/OR DITCHED TO DIRECT STORM RUNOFF FROM SUCH AREAS TO SEDIMENTATION CONTROL DEVICES TO PREVENT SEDIMENT CARRYING RUNOFF FROM ENTERING A WATERCOURSE, SEWER, OR ADJACENT LANDS. SUCH SEDIMENTATION CONTROL DEVICES INCLUDE BUT ARE NOT LIMITED TO: PROTECTIVE DITCHES, SEDIMENT TRAPS, SEDIMENT FILTERS, DITCH TRAPS, PIPE BARRIERS, STRAW BALE BERMS AND FILTERS AS DETAILED AND REQUIRED AND LOCATED ON THE DRAWINGS. AFTER THE PROJECT WORK HAS BEEN COMPLETED, INSPECTED AND APPROVED, THE CONTRACTOR SHALL REMOVE ALL TEMPORARY SEDIMENTATION CONTROL DEVICES, MATERIAL AND THEIR COLLECTED SILT AND DEBRIS AND COMPLETE THE PROJECT WORK IN ACCORDANCE WITH THE DRAWINGS AND SPECIFICATIONS.

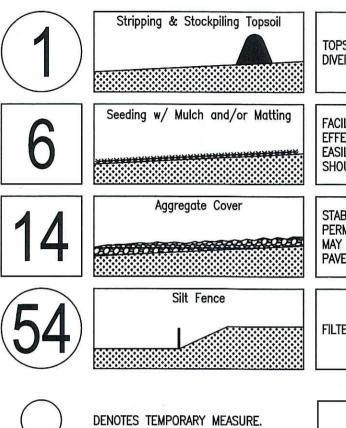
IN ROADWAY AREAS TEMPORARY AGGREGATE SURFACING SHALL BE PLACED IMMEDIATELY AFTER THE BACKFILLING HAS BEEN COMPLETED. DUST CONTROL MEASURES SHALL BE USED AT ALL TIMES.

WITHIN 15 DAYS FROM THE DATE A PROJECT IMPROVEMENT IS INSTALLED THE CONTRACTOR SHALL COMPLETE FINAL CLEANUP AND RESTORATION OF THE PROJECT AREA DISTURBED INCLUDING SPILL AREAS.

IF SEASONAL CONDITIONS PREVENT FINAL CLEANING AND RESTORATION, THE CONTRACTOR SHALL PROCEED WITH TEMPORARY STABILIZATION OF THE DISTURBED AREAS. FINAL CLEANUP AND RESTORATION WILL CONSIST OF FINAL GRADING, PAVING, PLACING TOPSOIL, SEED AND MULCH, AND/OR SODDING OF ALL DISTURBED AREAS OF THE PROJECT. TEMPORARY STABILIZATION SHALL CONSIST OF ROUGH GRADING THE DISTURBED AREAS TO A CONDITION READY TO RECEIVE TOPSOIL, SEEDING, AND MULCHING IN ACCORDANCE WITH SPECIFICATION SECTION 02270 FOR THE PROJECT. TEMPORARY STABILIZATION MATERIALS SHALL BE REMOVED AND DISPOSED OF AND FINAL CLEANUP AND RESTORATION SHALL BE COMPLETED NOT LATER THAN 60 DAYS AFTER SEASONAL CONDITIONS ALLOW PERFORMANCE OF THE REQUIRED WORK.

THE CONTRACTOR SHALL MINIMIZE THE DEPOSITION OF DIRT AND MUD ONTO PUBLIC ROADS. ALL DIRT AND MUD TRACKED ONTO PUBLIC ROADS SHALL BE REMOVED DAILY. ROADS SHALL ALSO BE CLEANED IMMEDIATELY FOLLOWING A RAIN EVENT. DIRT OR MUD WHICH COULD BE CONSTRUED AS A TRAFFIC HAZARD SHALL BE REMOVED IMMEDIATELY. STREET CATCH BASINS SHALL BE PERIODICALLY CLEANED AND FILTER FABRIC CHANGED AND MAINTAINED.

## **MICHIGAN UNIFIED KEYING SYSTEM**



TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A DIVERSION. STOCKPILE SHOULD BE TEMPORARILY SEEDED.

FACILITATES ESTABLISHMENT OF VEGETATIVE COVER. EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY. EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL BED.

STABILIZES SOIL SURFACE THUS MINIMIZING EROSION. PERMITS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER. MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS.

FILTERS AND DETAINS RUNOFF.

DENOTES PERMANENT MEASURE.

### **Grand Traverse County Requirements Soil Erosion Control - Temporary & Permanent**

1. ALL EARTH CHANGES SHALL BE DESIGNED, CONSTRUCTED, AND MAINTAINED IN SUCH A MANNER AS TO MINIMIZE THE EXTENT AND DURATION OF EARTH DISRUPTION. 2. VEGETATIVE STABILIZATION OR OTHER SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED THROUGHOUT THE DEVELOPMENT PROCESS.

3. EARTH CHANGES ASSOCIATED WITH LARGE DEVELOPMENTS SHALL BE STAGED TO KEEP EXPOSED AREAS OF THE SOIL AS SMALL AS PRACTICABLE. CRITICAL AREAS EXPOSED DURING CONSTRUCTION SHALL BE PROTECTED WITH TEMPORARY VEGETATION, MULCHING, FILTER FENCES, OR OTHER METHODS OF STABILIZATION.

4. STORMWATER RUNOFF CONTROL AND SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED BEFORE GRADING, FILLING, OR REMOVAL OF VEGETATIVE COVER IS INITIATED.

5. SEDIMENT BASINS, DESILTING BASINS, OR SILT TRAPS ARE REQUIRED AS NEEDED FOR ALL EARTH CHANGES. BASINS AND TRAPS SHALL BE SIZED TO ENTIRELY CONTAIN SEDIMENT-LADEN RUNOFF. 6. ALL PUBLIC UTILITIES SHALL BE INSTALLED IN SUCH FASHION THAT SOIL EROSION AND SEDIMENTATION IS MINIMIZED.

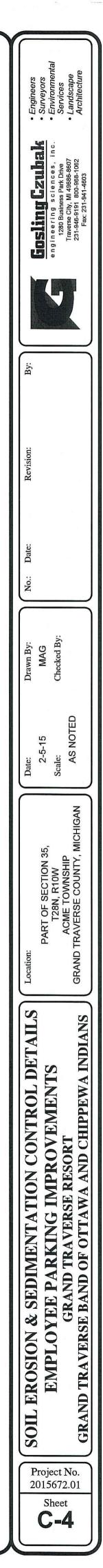
7. FILTER FENCES AND OTHER SOIL EROSION CONTROL FACILITIES INSTALLED AT THE PERIMETER OF A DEVELOPMENT SITE SHALL BE INSTALLED AT LEAST FIVE FEET FROM THE PROPERTY BOUNDARY TO ALLOW FOR ON-SITE MAINTENANCE.

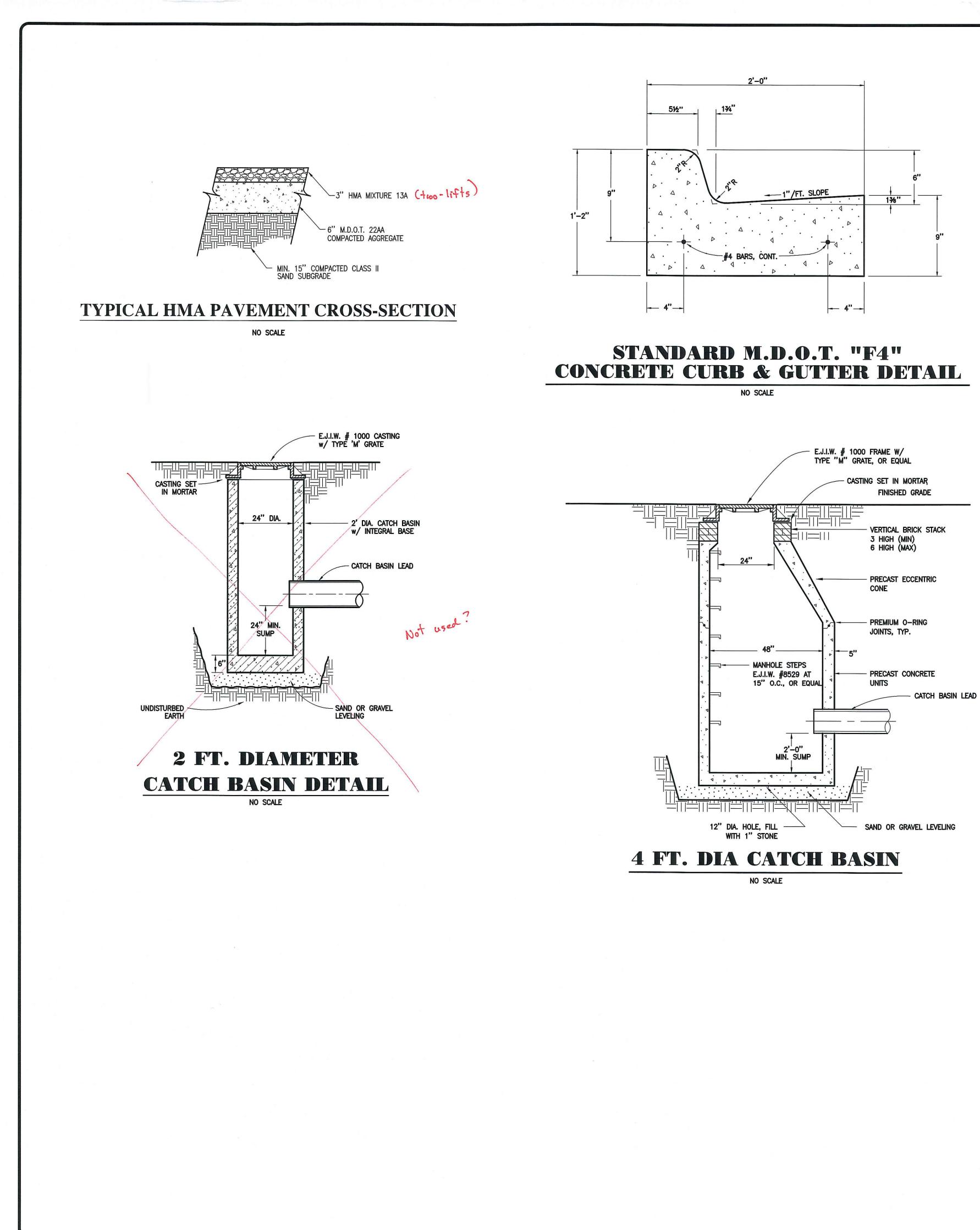
8. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHEN SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED.

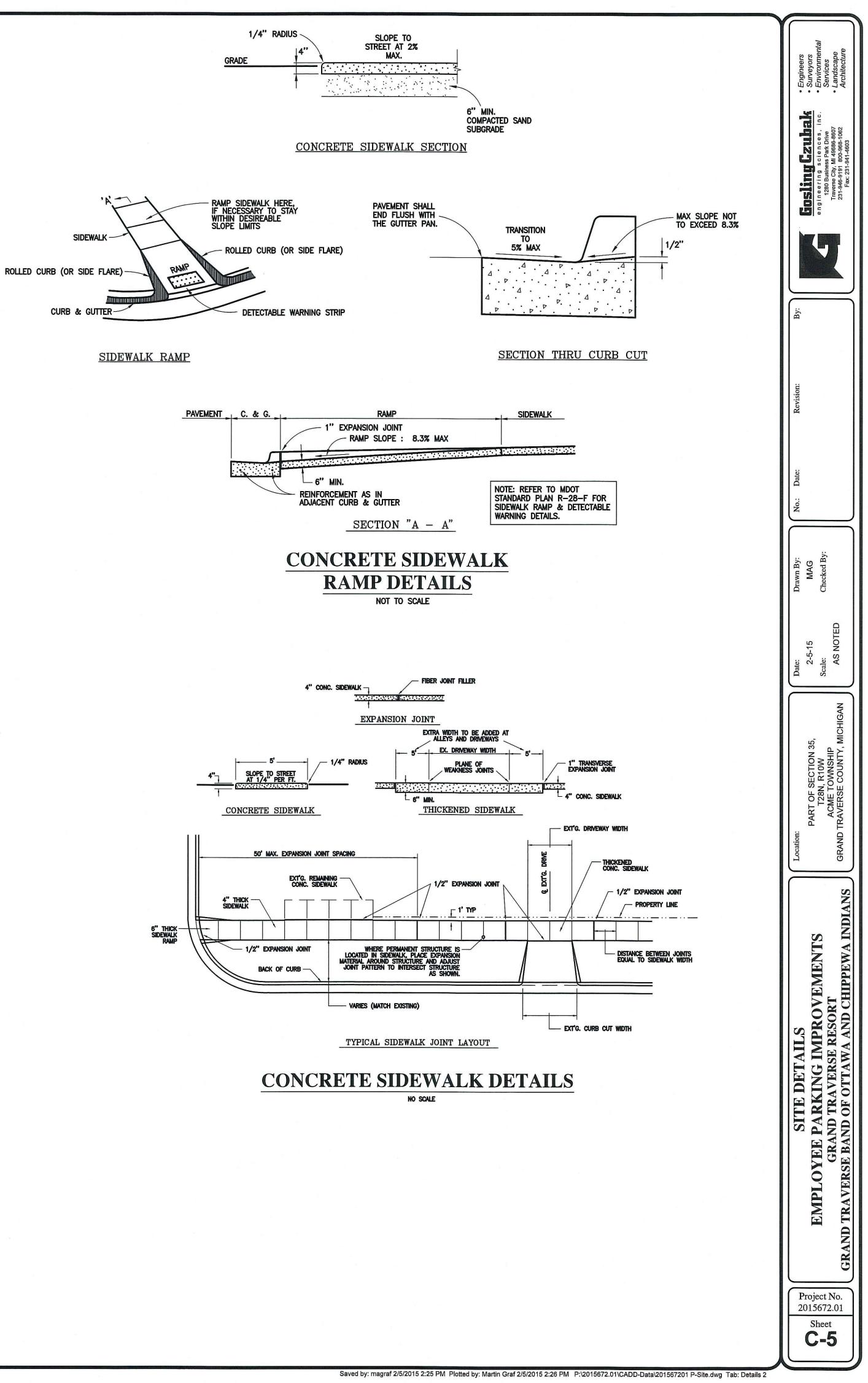
9. PERMANENT EROSION CONTROL MEASURE FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN FIFTEEN CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. ALL TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE ESTABLISHED.

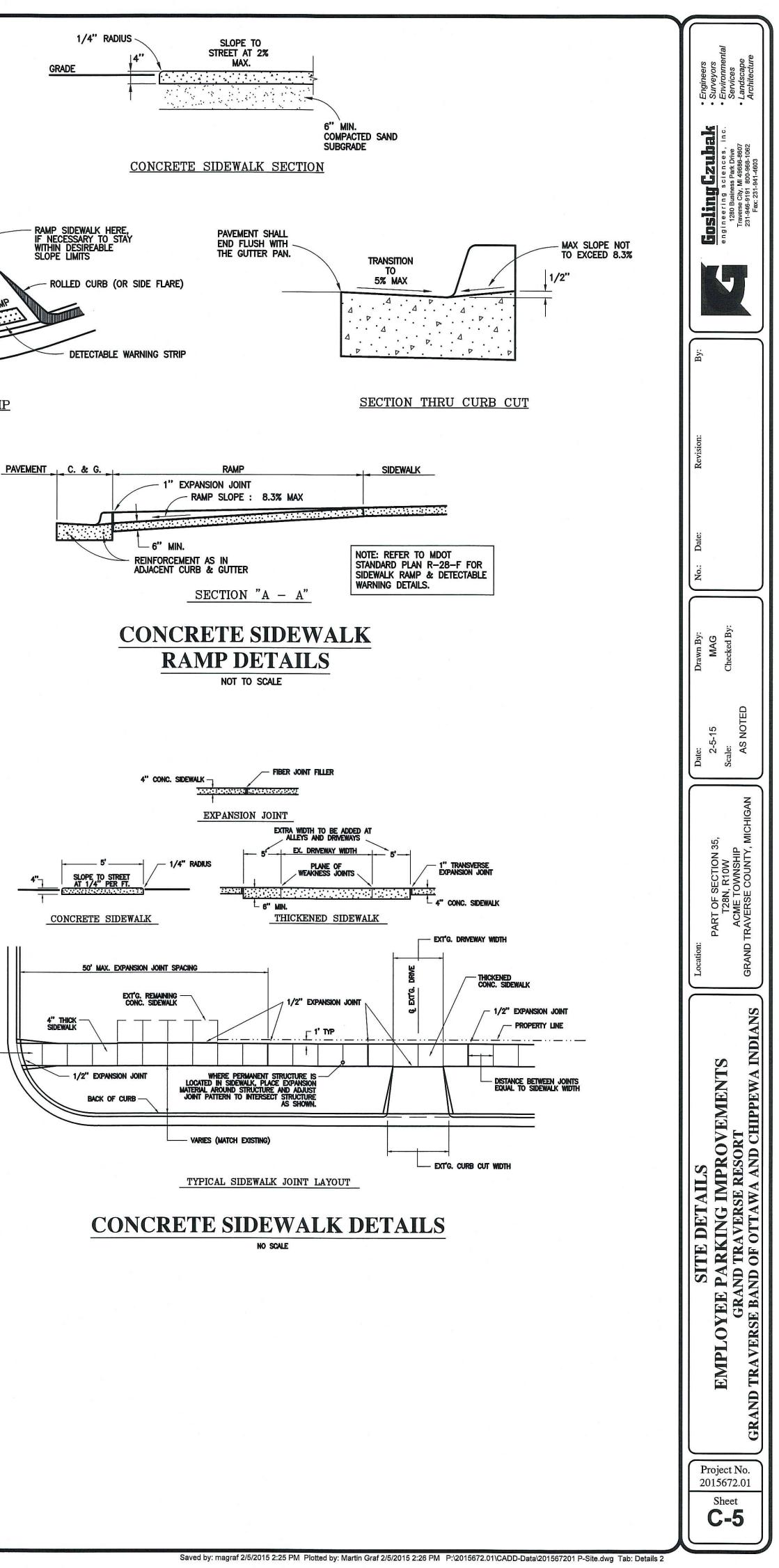
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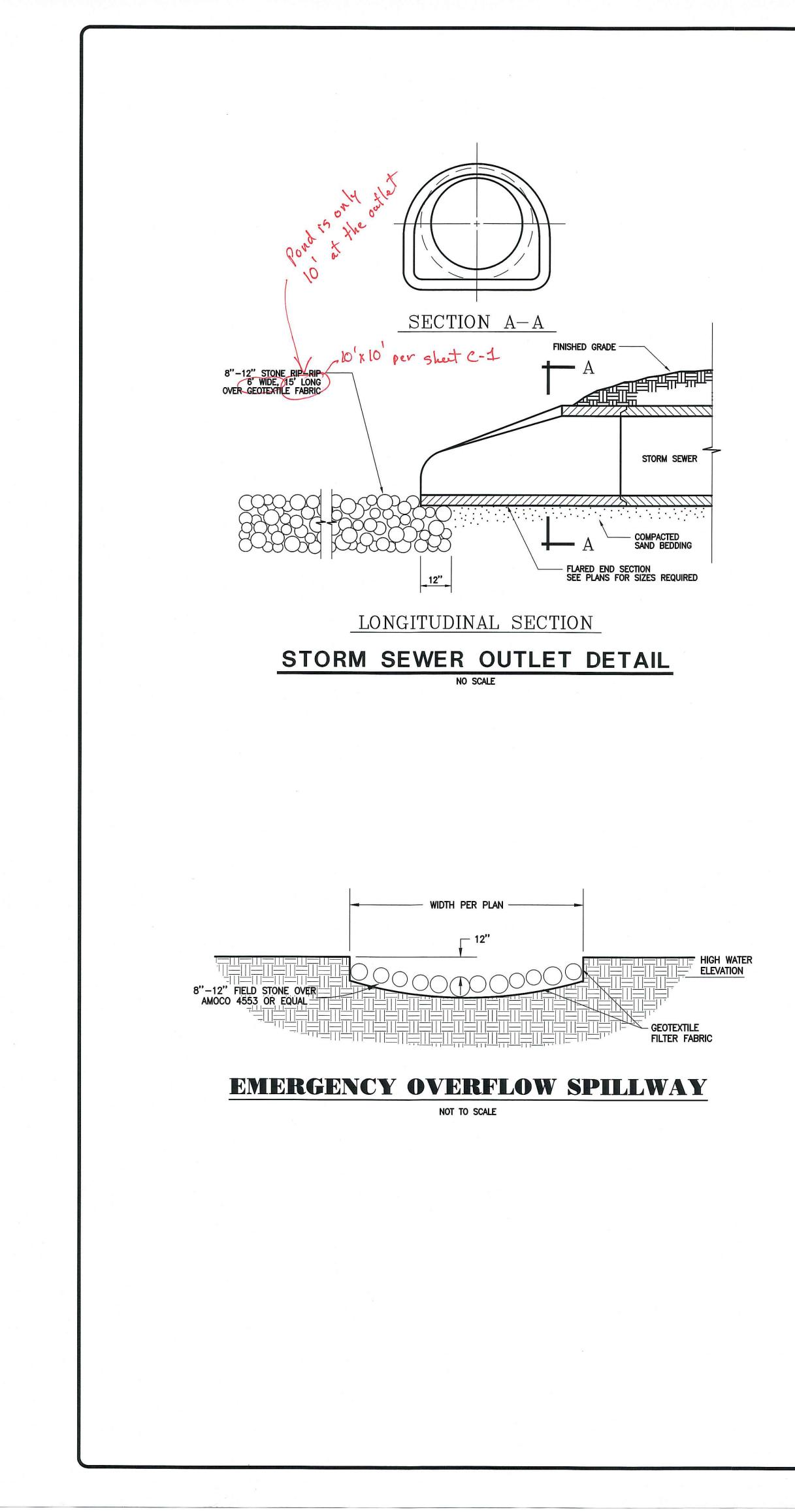
10. SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED THROUGHOUT THE DURATION OF THE EARTH CHANGE, INCLUDING THE LATER STAGES OF DEVELOPMENT. MAINTENANCE ACTIVITIES INCLUDE, BUT ARE NOT LIMITED TO REMOVAL OF ACCUMULATED SEDIMENT, STRUCTURAL REPAIRS, RE-SEEDING, REPLACEMENT OF VEGETATIVE COVER, AND LAWN MOWING.

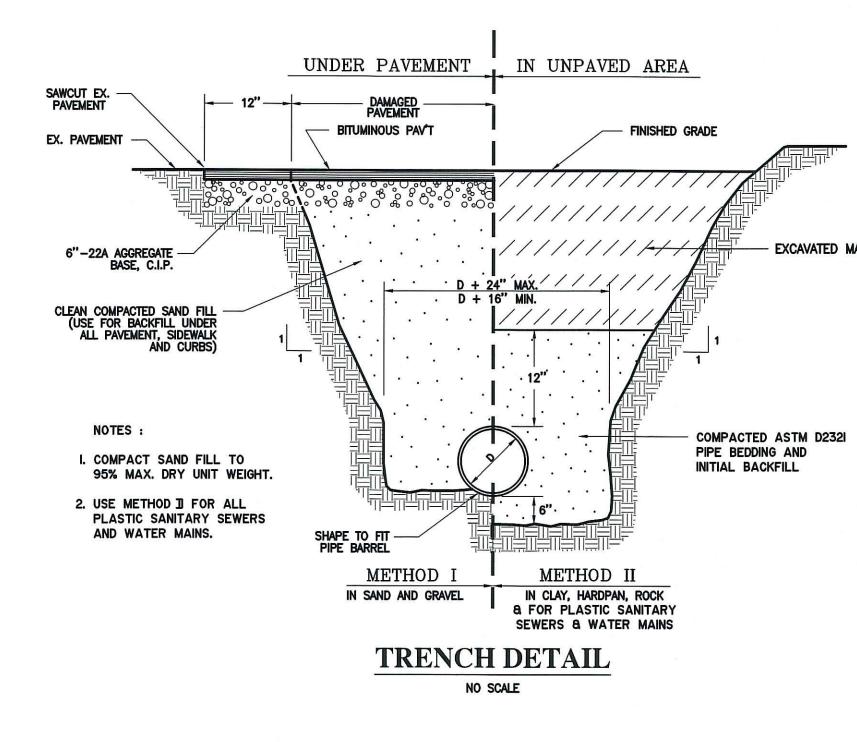


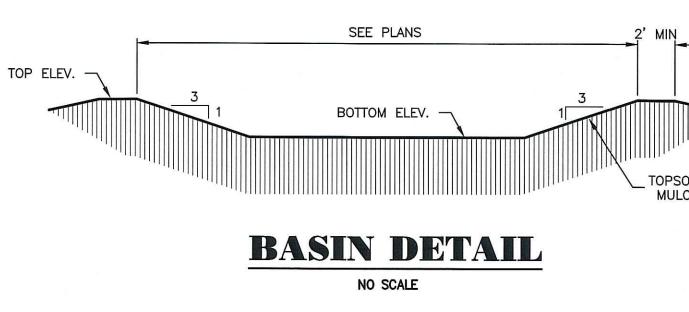


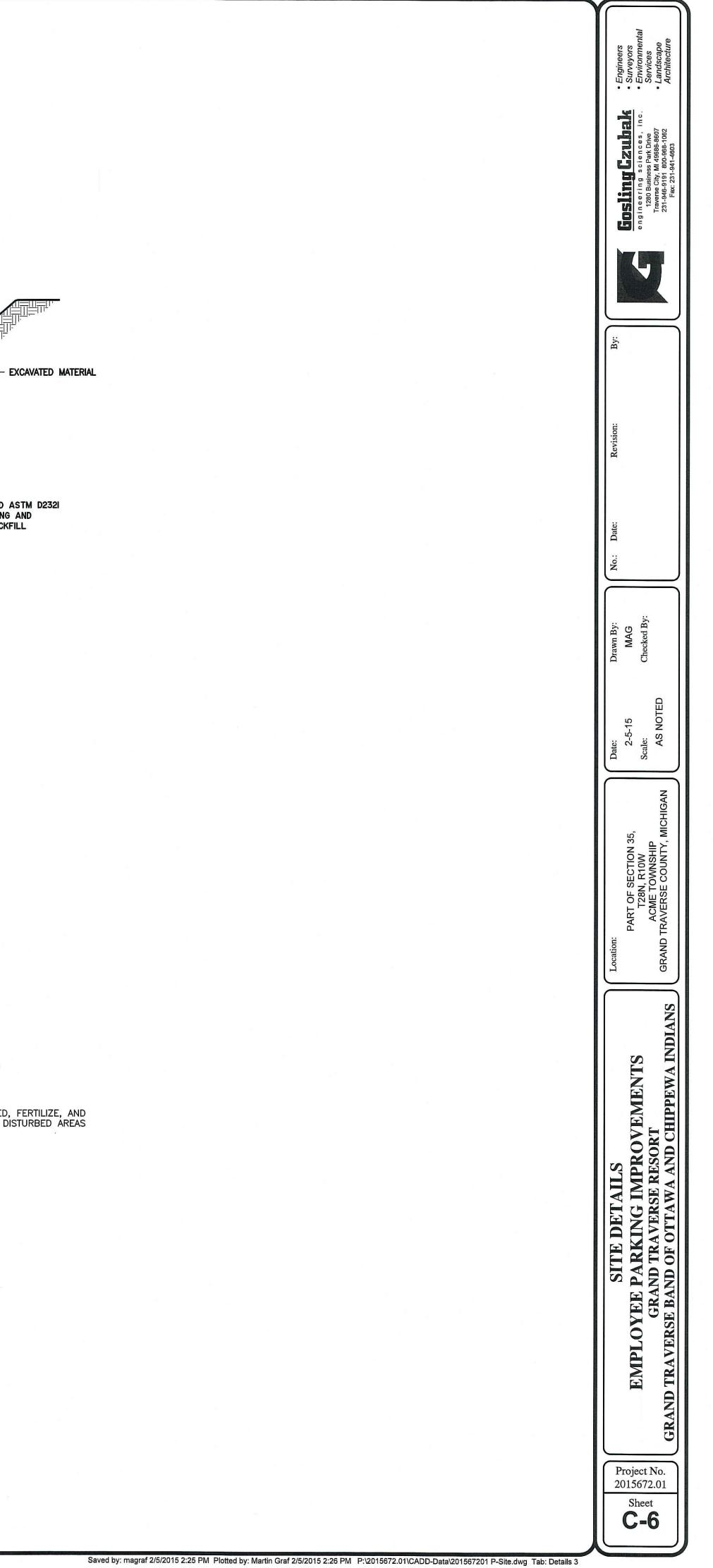












TOPSOIL, SEED, FERTILIZE, AND MULCH ALL DISTURBED AREAS

### B R (i) Beckett&Raeder

Landscape Architecture Planning, Engineering & Environmental Services

March 4, 2015

Mr. Martin Graf Gosling Czubak 1280 Business Park Drive Traverse City, MI 49686

Regarding: Site Plan Review Comments for Grand Traverse Resort & Spa Employee Parking Lot Improvements

#### Dear Mr. Martin,

The plan set dated February 9, 2015 has been reviewed for conformance with Acme Township's Stormwater Control Ordinance. Our comments are as follows:

- 1. The curve number (CN) for the "existing gravel parking" should be 76. This increases the required storage volume for the site. Revise the detention basins accordingly.
- 2. An outlet control structure is required for the detention basins. It is unclear where the ultimate discharge for the site is located.
- 3. Drainage areas for each catch basin shall be delineated. The acreage and cfactor should be included.
- 4. The storm sewer at catch basin #1 only has two-feet of cover. The designer should verify that the pipe will be able to support H-20 loading with only two-feet of cover.
- 5. A 0.1-foot drop in inverts within the manhole shall be provided.
- 6. The 2 Ft. Diameter Catch Basin detail can be removed, as it is not being used on the plans.
- 7. Proposed contour lines should reflect the proposed overflow elevation between the two detention basins. See attached red-lined plan sheet.
- 8. Proposed contours should extend throughout the site improvements. There are several areas where the contours are missing or ending without tying into existing contours.

Beckett & Raeder, Inc. 535 West William, Suite 101 Ann Arbor, MI 48103 Petoskey Office 616 Petoskey St., Suite 100 Petoskey, MI 49770 Traverse City Office 921 West 11th St., Suite 2E Traverse City, MI 49684

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*i* initiative 9. Proposed grades and contour lines shall be provided for the relocated sidewalk along Grand Traverse Resort Village Blvd.

Please submit revised plan set that address the above comments. If there are any questions, please contact our office at 734-996-2622.

Thank you,

*i initiative* 

² John Iacoangeli, AICP, PCP, LEED AP, CNU-A, FBCI Principal

Encl. Red-Lined Plan Set

planning review

## Beckett&Raeder

Landscape Architecture Planning, Engineering & Environmental Services

Date:	03.02.2015
From: To:	John Iacoangeli <b>Karly Wentzloff, Chairperson</b> ACME TOWNSHIP PLANNING COMMISSION 6042 Acme Road Traverse City, MI 49690
Project:	Grand Traverse Reort & Spa Employee Parking Lot Improvements 2015
Request:	Site Plan Review
Applicant:	Grand Traverse Resort & Spa
Parcel Addres	s: 100 Grand Traverse Village Blvd Williamsburg, MI
Parcel Numbe	er: 28-01-014-028-22

#### General Description:

The proposed project involves the expansion of the current gravel 138 car employee parking lot to a paved parking that will accommodate 254 cars and 6 buses. The project area is located at the northwest corner of North Village Drive and Grand Traverse Village Blvd. (yellow)



planning review

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#### Zoning Ordinance Compliance

The site plan does not involve the construction of a building and its location is adjacent to two golf course holes and an existing water tower. As a result, Section 7.5 Off-Street Parking and Loading Regulations governs

Applicable Section	Applicable Section 7.5 Requirements									
Regulation	Requirement	Provided on Site Plan								
Location	Parking lots shall be constructed in the rear or side yards.		YES							
Canopy Trees	One tree for every ten (10) parking spaces – 260 parking spaces or 26 trees	29	YES							
Native Plant Materials	Follow the "recommended Planting Guidelines for Municipalities."	Plant types meet the planting guidelines	YES							
Treed Islands	Provided at the ends of each row and planed with two trees.	6 interior islands with two trees	YES							
Snow Storage	Snow storage provided at a ratio of 15 sq.ft. per 100 sq.ft of parking area. Parking lot surface area is approximately 116,100 sq.ft. requiring snow storage area(s) of 17,415 sq.ft.		YES							

#### Agency Reviews

- 1. <u>Soil Erosion and Sedimentation Control</u> issued Permit No. 23435 on 2-10-2015.
- 2. <u>Grand Traverse Metro Emergency Services Authority</u> no review provided.

#### **Other Site Plan Issues**

1. Perimeter parking lot lighting will include 250 watt HPS 15 foot high poles and internal parking lot lighting will include 400 watt HPS 25 foot high poles which are below the US-31 / M-72 standards.

#### planning review

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#### Standards for Site Plan Review

Inconsistencies with the Standards are not in **bold** in the Findings.

Standards for Site Plan Review	
Standard	Finding
That the applicant may legally apply for site plan review.	The Applicant is the property owner.
That all required information has been provided.	Everything except comments from GT MESA.
That the proposed development conforms to all regulations of the zoning district in which it is located and all other applicable standards and requirements of this ordinance, including but not limited to all supplementary regulations.	The proposed use is permitted by right in the zoning district.
That the plan meets the requirements of Acme Township for fire and police protection, water supply, sewage disposal or treatment, storm, drainage, and other public facilities and services.	Reviews have been Soil Erosion and Sedimentation Control. <b>Fire review is outstanding.</b>
That the plan meets the standards of other governmental agencies where applicable, and that the approval of these agencies has been obtained or is assured.	Those agencies that have reviewed the plans have issued permits. <b>GT MESA comments</b> <b>not available at the time of this review.</b>
That natural resources will be preserved to a maximum feasible extent, and that areas to be left undisturbed during construction shall be so indicated on the site plan and at the site per se.	The current site is a relatively flat gravel parking lot.
That the proposed development property respects floodways and flood plains on or in the vicinity of the subject property.	Not applicable.
That the soil conditions are suitable for excavation and site preparation, and that organic, wet, or other soils which are not suitable for development will either be undisturbed, or modified in an acceptable manner.	Plans do not indicated any problematic soils. Development adjacent to the subject site would indicated acceptable soil suitability.
That the proposed development will not cause soil erosion or sedimentation problems.	Permit issued by Grand Traverse County Soil Ersoion and Sedimentation (#23435)
That the drainage plan for the proposed development is adequate to handle anticipated storm water runoff, and will not cause undue runoff onto neighboring property or overloading of water courses in the area.	

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That grading or filling will not destroy the character of the property or the surrounding area, and will not adversely affect the adjacent or neighboring properties.	The current site is a relatively flat field without vegetation.
That structures, landscaping, landfills or other land uses will not disrupt air drainage systems necessary for agricultural uses.	No adjacent agricultural uses. Property is located with the Grand Traverse Resort & Spa
That phases of development are in a logical sequence, so that any one phase will not depend upon a subsequent phase for adequate access, public utility services, drainage, or erosion control.	No phasing required.
That the plan provides for the proper expansion of existing facilities such as public streets, drainage systems, and water and sewage facilities.	The plan uses existing infrastructure.
That landscaping, fences or walls may be required when appropriate to meet the objectives of this Ordinance.	Landscaping provided per the parking regulations
That parking layout will not adversely affect the flow of traffic within the site, or to and from the adjacent streets.	Parking lot layout provides adequate circulation and manevuring lane width.
That vehicular and pedestrian traffic within the site, and in relation to streets and sidewalks serving the site, shall be safe and convenient.	The proposed design includes sidewalks which connect with the golf club house and the hotel and convention center.
That outdoor storage of garbage and refuse is contained, screened from view, and located so as not be a nuisance to the subject property or neighboring properties.	Not applicable
That the proposed site is in accord with the spirit and purpose of this Ordinance, and not inconsistent with, or contrary to, the objectives sought to be accomplished by this Ordinance and the principles of sound planning.	The proposed use meets the intent of the zoning district and special use permit.

#### Suggested Motion:

Approve the site plan submitted by GTB for the construction of a 260 vehicle parking lot located on a 3.00 acre parcel on the northwest corner of Grand Traverse Resort Village Drive and North Village Drive with the following stipulations:

- 1) The approved site plan package be signed by the Chairperson of the Planning Commission and the Applicant, or their representative.
- 2) Signage, if any, shall meet the Acme Township Zoning Ordinance.
- 3) Stormwater revisions must be completed prior and approved by Kris Enlow, P.E. prior to issuance of land use permit.

#### Acme Township Section 6.6 Ordinance Revisions US-31 / M-72 Business District

#### Section 6.6.5.2 – Building Placement, Density and Parking

The following **highlighted** text has been changed as noted.

Building Placement	SFN	MHN	CS	С	CF
Built-to Line (BTL) Distance from Property Line			-		
Front	30'	30′	30'	20′	5′
Side Street, corner lot	30'	30′	NA	20′	5′
<u>Setback</u>					
Side	10′	10′	10′	3′	5′
Rear	30'	30′	35′	25′	5′
Building front facade as a % of Lot Width (Min.)	NA	NA	NA	65%	75%
Side Street Facade as a % of Lot Depth (Min.)	NA	NA	NA	30%	50%

#### Section 6.6.6.3 Site Lighting

Wall pack lighting shall only be used on the rear or side of the building to illuminate exits and loading facilities.

Front facade illumination lighting may be used but will require the approval of the Planning Commission.

Parking lot lighting pole height (including luminaire) shall not exceed the height of the building or 27 feet whichever is less.

#### Section 6.6.6.5 Water Quality and Storm Water

All projects shall adhere to the Acme Township Stormwater Ordinance, as well as, incorporating low impact development (LID) water quality technologies. Low impact development water quality technologies shall include, but are not limted to, rain gardens, rooftop gardens, vegetated swales, cisterns, permeable pavers, porous pavement, and filtered stormwater structures will be required on site as a component of the overall stormwater plan. The Planning Commission has the authority to determine the type of LID that will be used as part of the approval process.

#### Section 6.6.6.6 Façade Components and Materials (All Buildings Except Residential-Only Buildings)

#### Facade Ornamentation

All visible elevations shall include decorative features such as cornices, pilasters, and friezes. Building recesses and protrusions will be required on larger buildings to break long uninterrupted building walls.

#### Façade Massing

Front façades 60 feet wide or wider shall incorporate wall offsets of at least two feet in depth (projections or recesses) a minimum of every 40 feet. Each required offset shall have a minimum width of 20 feet.

#### <u>Roofs</u>

When flat roofs are used, parapet walls with three-dimensional cornice treatments shall be used to conceal the roof

Asymmetric or dynamic roof forms allude to motion, provide variety and flexibility in nonresidential building design, and allow for unique buildings. Asymmetric or dynamic roof forms shall be permitted on nonresidential buildings as an alternative to Flat Roofs.

All roof-based mechanical equipment, as well as vents, pipes, antennas, satellite dishes, and other roof penetrations (with the exception of chimneys), shall be located on the rear elevations or screened with a parapet wall having a three-dimensional cornice treatment so as to have a minimal visual impact as seen from public street, existing single family uses, and land zoned for residential and agricultural uses.

#### Customer Entrances

Each side of a building facing a public street shall include at least one customer entrance, except that no building shall be required to provide entrances on more than two sides of the structure that face public streets.

Buildings shall have clearly defined, highly visible customer entrances that include no less than three of the following design features:

- a) Canopies/porticos above the entrance;
- b) Roof overhangs above the entrance;
- c) Entry recesses/projections;
- d) Arcades that are physically integrated with the entrance;
- e) Raised corniced parapets above the entrance;
- f) Gabled roof forms or arches above the entrance;
- g) Outdoor plaza adjacent to the entrance having seating and a minimum depth of 20 feet;
- h) Display windows that are directly adjacent to the entrance; or
- i) Architectural details, such as tile work and moldings, that is integrated into the building structure and design and is above and/or directly adjacent to the entrance.

#### **Building Materials**

Use of durable and traditional building materials shall be used. Fluted concrete masonry units and scored concrete masonry unit block, although not considered traditional building materials, may be used if approved by the Planning Commission.

Materials such as exterior insulation finish system (EIFS), concrete panels, and panel brick are not considered durable and traditional building materials and will not be used.