Regular Meeting of the Mt. Pleasant City Commission
Tuesday, May 27, 2025
7:00 p.m.

AGENDA

CALL TO ORDER:

PLEDGE OF ALLEGIANCE:

LAND ACKNOWLEDGEMENT STATEMENT:

ROLL CALL:

PROCLAMATIONS AND PRESENTATIONS:

1. Proclamation recognizing 2SLGBTQ+ Pride Month (June 2025).

ADDITIONS/DELETIONS TO AGENDA:

PUBLIC INPUT ON AGENDA ITEMS:

RECEIPT OF PETITIONS AND COMMUNICATIONS:

CONSENT ITEMS:

2. Approval of minutes from the regular meeting held May 12, 2025.
3. Consider Resolution granting six (6) month extension for HAZE MP LLC to operate an Adult-Use Recreational Retailer Establishment at 914 E. Pickard Street.
4. Consider setting a public hearing for June 9, 2025, for the purpose of providing the opportunity for public input on the proposed application by Reynolds Golden Finds LLC for a loan in the amount of $15,000 through the CDBG Revolving Loan Fund (RLF) program.
5. Consider approval of Payrolls and Warrants.

All interested persons may attend and participate. Persons with disabilities who need assistance to participate may call the Human Resources Office at 989-779-5313. A 48-Hour advance notice is necessary for accommodation. Hearing or speech impaired individuals may contact the City via the Michigan Relay Service by dialing 7-1-1. Public Comment and Public Hearings are opportunities for the public to comment on business and non-business items. Questions will not be answered during these times and instead should be directed to City Hall staff during normal business hours.

PUBLIC HEARINGS:

6. Public hearing on the amendment and adoption of Chapter 72 of the City's Code of Ordinances entitled "Bicycles" regarding the usage of motorized bikes and scooters on City owned trails.
7. Public hearing on the Community Development Block Grant Water Related Infrastructure Program application and consider approval of resolution on the same.
8. Public hearing on the 2026-2031 Proposed Capital Improvement Plan.

NEW BUSINESS:

9. Consider authorizing Public Safety Director Paul Lauria to proceed with the purchase of the 2024 Chevrolet Express Van from Fredrick Chevrolet and to contract Quigley Motor Company for upfitting services, at a total cost not to exceed $80,640, for use by both the Emergency Services Team (EST) and the Youth Services Unit (YSU). Funds to cover this purchase were awarded by the Saginaw Chippewa Indian Tribe at the Spring 2025 Two-Percent Distribution.

ANNOUNCEMENTS ON CITY-RELATED ISSUES AND NEW BUSINESS:

PUBLIC COMMENT ON AGENDA AND NON-AGENDA ITEMS:

RECESS:

WORK SESSION:

10. Discussion on EPIC MRA workplace climate survey.

RECESS:

CLOSED SESSION:

ADJOURNMENT:

All interested persons may attend and participate. Persons with disabilities who need assistance to participate may call the Human Resources Office at 989-779-5313. A 48-Hour advance notice is necessary for accommodation. Hearing or speech impaired individuals may contact the City via the Michigan Relay Service by dialing 7-1-1. Public Comment and Public Hearings are opportunities for the public to comment on business and non-business items. Questions will not be answered during these times and instead should be directed to City Hall staff during normal business hours.

PROCLAMATION

WHEREAS, in the movement toward equal rights for Two Spirit, lesbian, gay, bisexual, and transgender (2SLGBTQ+) people, a historic turning point occurred on June 28, 1969, in New York City, with the onset of the Stonewall Riots. During these riots led by transgender women of color, the queer community rose and fought back against discriminatory laws that have since been declared unconstitutional; and

WHEREAS, Pride celebrations have taken place around the country every June to commemorate the beginning of the Stonewall Riots; and

WHEREAS, June is celebrated as Pride Month nationwide; and

WHEREAS, Great Lakes Bay Pride works to connect the 2SLGBTQ+ and ally community to resources and education, offer networking opportunities, and advocate for civil rights in the Great Lakes Bay Region and beyond; and

WHEREAS, our nation was founded on the principle of equal rights for all people, but the fulfillment of this promise has been long in coming for many Americans. Some of the most inspiring moments in our history have arisen from the various civil rights movements that have brought one group after another from the margins to the mainstream of American society; and

WHEREAS, the City of Mount Pleasant supports the rights of every citizen to experience equality and freedom from discrimination in all forms.

NOW, THEREFORE I, Boomer Wingard, Mayor of the City of Mount Pleasant, do hereby proclaim June 2025 as

PRIDE MONTH

in Mount Pleasant and urge residents to celebrate with our members of the 2SLGBTQ+ community. Furthermore, recognizing the contributions made by members of this community and to actively promote the principles of equality, liberty, and justice.

In Witness Whereof, I have hereunto set my hand and Great Seal of the City of Mount Pleasant, Michigan, this 27th day of May 2025.

_____

Boomer Wingard, Mayor
City of Mount Pleasant

Minutes of the regular meeting of the City Commission held Monday, May 12, 2025, at 7:00 p.m., in the City Commission Room, 320 W. Broadway St., Mt. Pleasant, Michigan with virtual options.

Mayor Wingard called the meeting to order.

The Pledge of Allegiance was recited.

Land Acknowledgement statement was recited.

Commissioners Present: Mayor Boomer Wingard and Vice Mayor Maureen Eke; Commissioners Mary Alsager; Amy Perschbacher, Grace Rollins & John Zang

Commissioners Absent: Liz Busch

Others Present: City Manager Aaron Desentz and Interim City Clerk Marilyn Wixson

Proclamations and Presentations

Mayor Wingard read and presented a Proclamation in support of Public Works Week (May 18-24, 2025) to Public Works Director Jason Moore.

Mayor Wingard read a Proclamation in support of Economic Development Week (May 11-17, 2025).

Mayor Wingard read and presented a Proclamation recognizing Rotary Club's 100th Year Anniversary to Rotary Club members Eileen Jennings, Rich Fleming, Jenny Hoyle and Jennifer Marar.

City Manager Desentz introduced Policy Research Intern Colton Brewer.

Additions/Deletions to Agenda

Moved by Mayor Wingard and seconded by Commissioner Alsager to remove Item #19 "Consider appointments to the various boards and commissions as recommended by the Appointments Committee." from the agenda. Motion unanimously adopted.

Moved by Vice Mayor Eke and seconded by Commissioner Rollins to approve the Agenda as amended. Motion unanimously adopted.

Public Input on Agenda Items

Director Moore announced that a communication from Andy Brockman in support of TIFA was submitted on line.

Receipt of Petitions and Communications

Received the following petitions and communications:

5. Monthly report on police related citizen complaints received.
6. Planning Commission April 2025 Meeting Minutes.
7. Airport Joint Operations and Management March Board Minutes.

8. Notice of Temporary Traffic Control Order #5-2025.

Commissioner Zang requested that Items 12 and 15 be removed from the Consent Calendar.

Moved by Commissioner Perschbacher and seconded by Vice Mayor Eke to approve the following items on the Consent Calendar:

9. Minutes of the regular meeting of the City Commission held April 28, 2025.
10. Bid of Shain Roofing of Livonia, Michigan for Department of Public Safety Building Roof Restoration Agreement in the amount of $78,250 and budget amendment of $43,500.
11. Budget amendment of $28,170 for the purchase of essential replacement parts for Well #20.
12. Removed from Consent Calendar.
13. Contract with Kihn Heating & Cooling LLC of Mt. Pleasant, Michigan for CHILL Furnace & Water Heater Project in the amount of $143,950.
14. Set a public hearing for May 27, 2025 for the Community Block Development Grant Water Related Infrastructure Program.
15. Removed from Consent Calendar.
16. Payrolls and Warrants dated May 1, 2025 totaling $357,962.96.

Motion unanimously adopted.

Moved by Commissioner Zang and seconded by Vice Mayor Eke to approve the bid of Mead & Hunt of Lansing, Michigan for Professional Engineering Services Contract to perform required geotechnical and field survey work of Runway 9/27 subbase in an amount not-to-exceed $54,655 and authorize the City Manager to sign the contract. Motion unanimously adopted.

Moved by Commissioner Zang and seconded by Vice Mayor Eke to receive proposed Ordinance to amend Title VII: TRAFFIC CODE, Chapter 72: BICYCLES of the City's Code of Ordinances regarding the use of motorized bikes and scooters on City owned trails and set a public hearing for Tuesday, May 27, 2025 at 7:00 p.m. on same. Motion unanimously adopted.

Moved by Commissioner Alsager and seconded by Vice Mayor Eke to approve updates to the Municipal Employees' Retirement System (MERS) Adoption Agreement & Plan Addendum documents. Motion unanimously adopted.

Moved by Vice Mayor Eke and seconded by Commissioner Alsager to authorize Director of Public Safety Paul Lauria to work with the City Attorney to draft a contract to provide limited police services to the Village of Lake Isabella.

AYES: Commissioners Alsager, Eke, Perschbacher, Rollins & Wingard
NAYS: Commissioner Zang
ABSENT: Commissioner Busch
Motion carried.

Announcements on City-Related Issues and New Business

Commissioner Alsager thanked Director Moore for tour of Water Plant & WRRF and commented that staff did a really good job. She thanked the citizens as well as administration for the opportunity to be part of the team going to Okaya Japan. She would like the Commission to get out and look at Indian Pines Park as well as work on a short term rental policy.

Vice Mayor Eke, agrees that Director Moore gave the Commission an excellent experience. She encourages residents to ask for that tour so they can appreciate the water they drink. Staff is doing an amazing job. She thanked Director Biscorner for the wonderful job he is doing with parks. She walks through the parks and suggests everyone do that. If you do you will see a lot of work done. She also thanked him for working toward the expansion of the community garden so that hopefully some time this year they will include the orchard. There are still plots available. Finally, she thanked the City tax payers for supporting the trip to Sister City Okaya Japan. She hopes they will represent the City professionally and within the context of a global sisterhood.

Commissioner Perschbacher would like to remind individuals riding bikes and scooters to ride with the traffic and walkers to walk against traffic on the roads. Scooters and bicycles must follow the road signs. Motorists should be conscious of walkers, joggers and cyclists. You never know when one of them are going to come up on your side and we want to keep everyone safe.

Mayor Wingard requested update on bronze statues. Director Biscorner reported that they have been lucky enough to have Larry Vorhees, who helped make previous statues, assisting again. They are reaching out to Acra Cast, Inc. in Bay City to find out cost of casting the molds that have been located.

Mayor Wingard thanked the residents of the Mt. Pleasant School District for passing millage renewal. He wished the delegation going to Okaya Japan safe travels; and commented that he is unable to go himself but sent a personal and formal letter of greeting to their Mayor that Vice Mayor Eke is kind enough to deliver on his behalf. This is the 60th anniversary of the Sister City relationship and he hopes that it will continue for at least another 60 years.

Commissioner Zang announced that Isabella Bank is offering a community shred day on May 23 at South Mission branch. Limit of 4 boxes. Thank you to Isabella Bank. He also was thankful for the tour of WRRF and remarked that it is good to see the new technology and a staff so dedicated to their work. He announced that Scott Haltiner was awarded the 2024 MRWA Water Operations Specialist of the Year.

Public Comment on Agenda and Non-Agenda Items

Elizabeth Brockman, 1117 Wendrow Way; Sid Smith, 730 E. Bluegrass Rd.; and Troy Hicks, 115 & 117 S. University spoke in support of TIFA.

The Commission recessed at 8:10 p.m. and returned at 8:20 p.m.

WORK SESSION: Discussion on 2026-2031 Capital Improvement Plan.

Finance Director Lauren Pavlowski provided a presentation on the 2026-2031 Capital Improvement Plan.

Discussion ensued.

WORK SESSION: Discussion on Central Business District TIFA.

City Manager Desentz and City Engineer Stacie Tawari provided a presentation on the CBD TIFA and the possible projects that could be considered to improve the City's downtown.

Discussion ensued.

WORK SESSION: Discussion on EPIC MRA workplace climate survey.

Mayor Wingard led a discussion on EPIC MRA workplace climate survey.

Moved by Commissioner Perschbacher and seconded by Vice Mayor Eke to adjourn the meeting at 10:23 p.m.

_____ _____

Boomer Wingard, Mayor Marilyn Wixson, Interim City Clerk

Memorandum

Mt. Pleasant [meet here]

TO: Aaron Desentz, City Manager

FROM: Marilyn Wixson, Interim City Clerk

DATE: May 1, 2025

SUBJECT: Deadline extension request - Haze MP LLC

Haze MP LLC has conditional authorization to operate an Adult-Use Recreational Retailer Establishment at 914 E. Pickard Street.

The applicant has submitted a request that the City Commission grant a six (6) month extension of certain deadlines related to the conditional authorization. Section 115.03(G) states the City Commission may extend any of the deadlines upon a showing of good cause.

The current timeline is as follows:

Application Date – December 8, 2023
Conditional Authorization Issued – December 8, 2023
SUP granted (w/conditions) – January 4, 2024
Final SUP approval granted March 11, 2024
State License – no later than June 8, 2025
Final Authorization – no later than June 8, 2025

The applicant is requesting an extension under Section 115.03(F)(3) which requires the applicant to obtain a State Operating License within 18 months of receiving conditional authorization. The current deadline is June 8, 2025, and the requested deadline extension of six months would be December 8, 2025. This request is due in part to unforeseen challenges in securing the necessary third-party bids and material delays.

Staff recommends the adoption of the attached Resolution granting the six (6) month extension.

RESOLUTION

WHEREAS Haze MP LLC received conditional authorization for an Adult Use Marihuana Retailer Establishment on December 8, 2023; and

WHEREAS, Section 115.03(F) of the Mount Pleasant City Code of Ordinances requires the City Clerk to grant final authorization for conditionally authorized recreational marihuana establishments if the applicant (1) Submits an application for special use authorization pursuant to Section 154.410(B)(4)(p) of the zoning ordinance within 90 days of receiving conditional authorization; (2) Obtains special use authorization within twelve months of receiving conditional authorization; (3) Obtains a state operating license within 18 months of receiving conditional authorization; and (4) Enters into a written agreement with the City confirming that the marihuana establishment will operate in accordance with operational standards described by the applicant in the application and in any supplemental materials submitted.

WHEREAS, Haze MP LLC has satisfied the requirements of sections 115.03(F) (1) and (2) of the Mount Pleasant City Code of Ordinances and obtained a Final Special Use Permit from the Planning Commission on March 11, 2024; and

WHEREAS, Haze MP LLC has not yet satisfied the requirements under Sections 115.03(F)(3) & (4); and

WHEREAS, the conditional authorization granted to Haze MP LLC will otherwise expire because the applicant has not obtained a state operating license within 18 months of receiving conditional authorization as specified under Section 115.03(F)(3); and

WHEREAS, Haze MP LLC has requested a six (6) month extension to meet the requirements of Sections 115.03(F)(3) & (4) for cause as outlined in their April 24, 2025, request for extension; and

WHEREAS, Sections 115.03(G) of the Mount Pleasant City Code of Ordinances authorizes the City Commission to extend any of the deadlines required by Section 115.03(F) upon a showing of good cause.

NOW THEREFORE, BE IT RESOLVED as follows:

1. The City Commission of the City of Mount Pleasant finds that Haze MP LLC has established good cause to extend the deadline to meet the requirements of Sections 115(F)(3) & (4).
2. Haze MP LLC's request under Section 115.03(G) for a six-month extension to satisfy the requirements for Section 115.03(F)(3) & (4) for the Adult-Use Retailer License located at 914 E. Pickard is granted and the deadline to satisfy such requirements shall be December 8, 2025.
3. Except as otherwise modified by this Resolution, all other deadlines established by Chapter 115 of the Mount Pleasant City Code of Ordinances shall remain in full force and effect.

Memorandum

Mt. Pleasant
meet here

TO: Aaron Desentz

FROM: Lauren Pavlowski, Finance Director

DATE: May 22, 2025

SUBJECT: Request to Set a Public Hearing on a Revolving Loan Application

Background:

In 2013 the City was required by the Michigan Economic Development Corporation (MEDC) to relinquish its long-held CDBG Revolving Loan Fund (RLF) to a larger regional organization for use by communities throughout the eight county Prosperity Region 5, to which the City belongs. Because of the RLF requirements and other factors, none of the RLF funds were used in the Region and the MEDC sought other approaches to the use of these funds before being required to return them to the U.S. Department of Housing and Urban Development (HUD).

In order to assist with marking the funds, vetting projects, and awarding and administering the RLF funds for qualified projects, the MEDC selected Northern Initiatives, based in Marquette, to be the Loan Fund Administrator for this program. City staff and the Middle Michigan Development Corporation have been working with Northern Initiatives to identify projects which qualify for the very restrictive use of the funds in order to make loans for these purposes, restricted to applicants within the City of Mt. Pleasant. To date, one loan has been made to Gursky Limited (dba Motorless Motion) in downtown Mt. Pleasant in 2019 and one was made to Green Tree Cooperative Grocery, Inc, a local downtown business in 2020. Northern Initiatives has recently been working with Reynolds Golden Finds LLC, to make a loan to continue to fulfill our responsibility for loaning out RLF funds under the program. Repayment of loans made under the RLF program become de-federalized and are available with less restrictions to loan to other businesses within the City.

At their May 22nd, 2025 meeting, the Revolving Loan Fund Committee approved the application for Reynolds Golden Finds LLC loan. The $15,000 loan is from the CDBG Revolving Loan Fund for the purchase of signage and inventory, fund a reserve account, and pay accounts payable, with the expectation of creating 1 new full-time job in the next 2 years. Reynolds Golden Finds LLC has committed that this job would be filled by low-to-moderate income employee.

In order to continue the loan application process, the City is required to hold a public hearing on the application for the purpose of affording citizens an opportunity to examine and submit comment(s) on the proposed application for a loan through the CDBG RLF program. A copy of the Reynolds Golden Finds LLC loan application is on file with the City's Finance Division.

Requested Action:

At the May 27th, 2025 Commission meeting, staff requests the City Commission to set a public hearing for June 9th, 2025 for the purpose of providing the opportunity for public input on the proposed application by Reynolds Golden Finds LLC for a loan in the amount of $15,000 through the CDBG Revolving Loan Fund (RLF) program.

CHECK REGISTER FOR CITY OF MTPLEASANT
CHECK DATE FROM 05/02/25 - 05/15/2025

Check Date	Vendor Name	Description	Amount
05/15/2025	ADAM WALLEMAN	GRAVEL DRIVE APPROACH PAVING REIMB	450.00
05/15/2025	AIDAN MCCARTHY	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	75.00
05/15/2025	ALMA TIRE SERVICE INC	SUPPLIES/VEHICLE MAINT - POLICE - #KR302	381.70
05/15/2025	ANGIE MCCANN	REIMBURSEMENT MILEAGE THRU APRIL 2025	14.00
05/15/2025	AUDRA SZELAG	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	45.00
05/15/2025	AUSTIN PAHL	REIMBURSEMENT - TRAINING MEALS	270.00
05/15/2025	AUTOZONE, INC.	SUPPLIES DPS	7.67
05/15/2025	AVANTIK	CONTRACT SVCS- WRRF	767.00
05/15/2025	AXON ENTERPRISE, INC.	SUPPLIES POLICE	26,909.58
05/15/2025	BATCO INC	SUPPLIES - PARKS	836.00
05/15/2025	BEN DVORAK	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	30.00
05/15/2025	BILL BRICKNER	REIMBURSEMENT PHONE	50.00
05/15/2025	BLOCK ELECTRIC COMPANY	CONTRACT SVCS- PARKS	744.40
05/15/2025	BRAXTON GOMEZ	REIMBURSEMENT - TRAINING MEALS	231.00
05/15/2025	BRIAN BLOCK	REFUND OF MOBILE FOOD TRUCK INSPECTION F	75.00
05/15/2025	BROCK BINDER	CONTRACT SVCS- K-2ND BASKETBALL THRU MAR	30.00
05/15/2025	BS&A SOFTWARE	CONTRACT SVCS	3,817.00
05/15/2025	CAMERON SMITH	REIMBURSEMENT MEAL FOR TRAINING	270.00
05/15/2025	CDW GOVERNMENT, INC	SUPPLIES - DPS TONER	656.63
05/15/2025	CENTRAL MICH UNIV - MAILROOM	POSTAGE/HANDLING - DAILY MARCH	594.82
05/15/2025	CENTRAL MICHIGAN HEALTH DEPT	CONTRACT SVCS HR NEW HIRE	633.00
05/15/2025	CINTAS CORP	CONTRACT SVCS- WTP	59.32
05/15/2025	CLAYTON MOLYNEAUX	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	45.00
05/15/2025	CMU ADVENTURE SEMINARS	CLIMBING CLUB SPRING 2025	675.00
05/15/2025	COYNE OIL CORPORATION	FUEL DPS	9,799.26
05/15/2025	CRYSTAL CLEAN, LLC	FUEL MOTOR POOL	361.51
05/15/2025	CULLIGAN	CONTRACT SVCS - 1111841	31.73
05/15/2025	DAVID GROTHAUSE	FARMERS MKT TOKEN REIMB THRU MAY 1ST 25	23.00
05/15/2025	DAVID MCCLAIN	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	75.00
05/15/2025	DAWN WINKELMAN	REIMBURSEMENT METER READER MILEAGE	25.90
05/15/2025	DELTA COLLEGE	TRAINING	525.00
05/15/2025	DINGES FIRE COMPANY	SUPPLIES - FIRE DEPT	458.63
05/15/2025	DTE ENERGY	UTILITIES DUE MAY 15 25	13,127.22
05/15/2025	EJ USA, INC	SUPPLIES- WATER	1,610.00
05/15/2025	ELECTIONSOURCE	CONTRACT SVCS-ELECTIONS	2,326.50
05/15/2025	ELIZA FABER	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	15.00
05/15/2025	EVAN BRADLEY	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	60.00
05/15/2025	FIDELITY SECURITY LIFE INSURANCE CO	OPTICAL INSURANCE PREMIUMS - MAY 2025	1,207.14
05/15/2025	FISHBECK - ENGINEERS/ARCHITECTS/	MT PLEASANT/ ISLAND SIDE STREAM RESTORAT	3,300.75
05/15/2025	FLEIS & VANDENBRINK	CONTRACT SVCS- PARKS FEB-MAR 2025	5,410.00
05/15/2025	FLEX ADMINISTRATORS	FSA ADMINISTRATIVE FEE APRIL 2025	189.00
05/15/2025	GILL-ROY'S HARDWARE	SUPPLIES - DPS	13.09
05/15/2025	GREEN SCENE LANDSCAPING, INC.	CONTRACT SVCS PARKS	5,358.72
05/15/2025	HIRERIGHT	CONTRACT SVCS - HR	979.26
05/15/2025	HYDROCORP, INC.	CROSS CONNECTION INSPECTIONS/REPORTING A	11,058.50
05/15/2025	IDEXX DISTRIBUTION, INC.	CHEMICALS WATER	387.03
05/15/2025	INFOSEND, INC	CONTRACT SVCS	787.61
05/15/2025	ISABELLA COUNTY TREASURER	MTT AND ASS PRE CHANGES	2,184.19
05/15/2025	JARED BOUMAN	REIMBURSEMENT CELL PHONE MAR 2025	50.00
05/15/2025	JASON MOORE	REIMBURSEMENT MILEAGE FROM MAR TO APRIL	38.78
05/15/2025	JEFFREY BROWNE	REIMBURSEMENT TRAINING MEALS	56.00
05/15/2025	JUSTIN NAU	REIMBURSEMENT- TRAINING MEALS	244.00
05/15/2025	KAYA FLAHERTY	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	75.00

05/15/2025	KERRY HARGER	MPPS SCHOOL SPONSERSHIP FOR SUMMER PEAK	480.00
05/15/2025	KIM ONSTOTT	MPPS SCHOOL SPONSERSHIP FOR SUMMER PEAK	480.00
05/15/2025	KOPY KORNER	BUSINESS CARDS	106.00
05/15/2025	KRAPOHL FORD LINCOLN MERC	SUPPLIES/VEHICLE MAINT - UNIT #462	91.56
05/15/2025	KYLE EISENBERGER	REIMBURSEMENT TRAINING MEALS	56.00
05/15/2025	LATITUDE MEDIA LLC WCZY/WMMI	CONTRACT SVCS - FARMERS MARKET	200.00
05/15/2025	LAURA BIGARD	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	45.00
05/15/2025	LAUREN PAVLOWSKI	REIMBURSEMENT FOR PHONE FOR MONTHS JAN T	200.00
05/15/2025	LOGOS GALORE/MORDICA SALES	SUPPLIES DPS	116.00
05/15/2025	LUCAS SZELAG	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	30.00
05/15/2025	LUCY KEYES	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	60.00
05/15/2025	MARCUS BLACK	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	60.00
05/15/2025	MARK KARIMI	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	75.00
05/15/2025	MELISSA GARCIA	TUITION REIMBURSEMENT SPRING 25 ACCT 213	1,724.00
05/15/2025	MELISSA GARCIA	TUITION REIMBURSEMENT SPRING 25 ENG 205	1,293.00
05/15/2025	METRON-FARNIER, LLC	METER REPLACEMENT WATER/WRRF	128,927.30
05/15/2025	MICAH SPRINGER	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	75.00
05/15/2025	MICHELLE FUNK	MPPS SCHOOL SPONSORSHIP FOR SUMMER PEAK	960.00
05/15/2025	MICHIGAN PIPE & VALVE	SUPPLIES WATER	985.00
05/15/2025	MID MICHIGAN AREA CABLE	VIDEO PRODUCTION - MAY 2025	450.00
05/15/2025	MID-MICHIGAN INDUSTRIES	RECYCLING AT DPS	95.08
05/15/2025	MORGANN BOOTH	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	105.00
05/15/2025	MT PLEASANT KIWANIS CLUB	MISCELLENEOUS - DUES - JAN THROUGH MAR	150.00
05/15/2025	NAKOTA AGARDY	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	60.00
05/15/2025	NATHAN KOUTZ	REIMBURSEMENT TRAINING MEALS	56.00
05/15/2025	ODP BUSINESS SOLUTIONS LLC	SUPPLIES	26.51
05/15/2025	O'NEIL & DUSO PLLC	PROSECUTORIAL SVCS RETAINER MAY	7,941.70
05/15/2025	OTIS ELEVATOR COMPANY	BORDEN ELEVATOR MAINTENANCE	485.13
05/15/2025	PAYMENTUS	SUPPLIES	1,050.00
05/15/2025	PENNY LEW	REIMBURSEMENT METER READER MILEAGE	9.80
05/15/2025	PLACER LABS, INC	CONTRACT SVCS	18,000.00
05/15/2025	PRECISE TAX ASSESSMENT LLC	MONTHLY ASSESSING CONTRACT	9,083.33
05/15/2025	PROGRESSIVE AE, INC.	MT PLEASANT MISSION ST CORRIDOR STUDY	8,137.50
05/15/2025	REGINA LAWRENCE	REIMBURSEMENT METER READER MILEAGE APRIL	40.60
05/15/2025	RENT-RITE OF MT PLEASANT	EQUIPMENT RENTAL	236.17
05/15/2025	RILEY OLSEN	CONTRACT SVCS- K-2ND BASKETBALL THRU MAR	15.00
05/15/2025	RONDA HAINES	UB BAG TAG REFUND PETTY CASH REPLENISH	1,867.50
05/15/2025	RYLEIGH FOSTER	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	105.00
05/15/2025	SAM MEASE	CONTRACT SVCS - YOUTH SOCCER REF THRU MA	30.00
05/15/2025	SPECTRUM PRINTERS, INC.	CONTRACT SVCS - ELECTIONS	304.00
05/15/2025	STERICYCLE, INC.	PAPER SHREDDING AT CITY HALL	268.91
05/15/2025	SUMMIT FIRE PROTECTION	CONTRACT SVCS-WRRF	719.75
05/15/2025	SUMMIT FIRE PROTECTION	CONTRACT SVCS- WTP	233.00
05/15/2025	T.H. EIFERT, LLC	CONTRACT SVCS	6,858.61
05/15/2025	TINA CAPUSON	FARMERS MKT TOKEN REIMB THRU MAY 1ST 25	43.00
05/15/2025	TRAVIS WELSH	REIMBURSEMENT - PHONE MAY 25	49.99
05/15/2025	UNIFIRST CORPORATION	MOTOR POOL MATS	169.22
05/15/2025	USABLUEBOOK	SUPPLIES WRRF	342.87
05/15/2025	VANCE OUTDOORS, INC.	POLICE TRAINING SUPPLIES	9,165.00
05/15/2025	VANGUARD FIRE & SECURITY SYSTEMS	CONTRACT SVCS	3,119.80
05/15/2025	VIRGINIA ELIZABETH LOOSE	FARMERS MKT TOKEN REIMB THRU MAY 1ST	9.00
05/15/2025	VREDEVELD HAEFNER LLC	2024 ANNUAL AUDIT PAYMENT #1	19,500.00
05/15/2025	WILLIAMS & WORKS	CONTRACT SVCS CITY HALL RETAINING WALL 2	3,046.00
05/15/2025	WINDEMULLER	CONTRACT SVCS - WTP	8,060.00
05/15/2025	WRIGHT EXPRESS FINANCIAL SERVICES	CITY CREDIT CARD PAYMENT	57,672.43
05/15/2025	YEO & YEO TECHNOLOGY	DPW FIREWALL INSTALLATION	3,376.00
Bank COMM COMMON CASH			

COMM TOTALS:	
Total of 127 Checks:	394,290.70
Less 2 Void Checks:	45.00
Total of 107 Disbursements:	394,245.70

DIVISION OF PUBLIC SAFETY
CITY OF MT. PLEASANT

804 E. High Street, Mount Pleasant, MI 48858
Phone: (989) 779-5100 Fax: (989) 773-4020

MEMORANDUM

DATE: **May 19th, 2025**

TO: **Aaron Desentz, City Manager**

FROM: **Paul Lauria, Director of Public Safety**

SUBJECT: **Chapter 72 "Bicycles" Ordinance Amendments**

At the May 12, 2025, regular meeting of the City Commission, a Public Hearing was scheduled for May 27, 2025, to discuss and consider adoption of proposed amendments to Chapter 72 of the City's Code of Ordinances, titled "Bicycles." The draft ordinance is attached to this memorandum for review.

These proposed amendments update the City of Mt. Pleasant's Traffic Code to regulate both traditional bicycles and electric bicycles. The ordinance includes:

- **Definitions and Classifications:** Clear definitions of electric bicycle classes (1, 2, and 3).
- **Use Regulations:** Guidance on where each class of e-bike may be operated (e.g., public roads, trails, shared-use paths).
- **Safety Standards:** Requirements for safety equipment including lights, brakes, and signaling devices.
- **Prohibited Use:** Restrictions on the use of Class 2 and Class 3 electric bicycles on specific city trails.
- **Enforcement and Penalties:** Violations will be considered civil infractions, with fines of up to $50.

Enforcement of this ordinance will be managed primarily by Code Enforcement Officers. Upon observing violations, officers will educate individuals and issue a warning regarding the new regulations. Repeat offenses may result in formal citations.

RECOMMENDED ACTION

Following the Public Hearing on May 27, 2025, it is recommended that the City Commission adopt the proposed amendments to Chapter 72 of the City Code of Ordinances, entitled "Bicycles," and authorize incorporation of the updated provisions into the City Code.

CITY COMMISSION
CITY OF MOUNT PLEASANT

ISABELLA COUNTY, MICHIGAN

ORDINANCE NO. 25-____

AN ORDINANCE TO AMEND TITLE VII: TRAFFIC CODE, CHAPTER 72 OF THE CITY'S CODE OF ORDINANCES ENTITLED "BICYCLES"

IT IS HEREBY ORDAINED BY THE PEOPLE OF THE CITY OF MOUNT PLEASANT:

Section 1. Amendment of Title VII: Traffic Code, Chapter 72: Bicycles.

Chapter 72: Bicycles of the City Code of Ordinances is hereby amended in its entirety to read as follows:

"Chapter 72: Bicycles and Electronic Bicycles".

GENERAL PROVISIONS

§ 72.01 DEFINITIONS.

For the purpose of this chapter, the following definitions shall apply unless the context clearly indicates or requires a different meaning.

BICYCLE. Any device propelled by human power upon which any person may ride, having two or three wheels in a tandem or tricycle arrangement, all of which are over 14 inches in diameter.

ELECTRIC BICYCLE. Electric bicycle means a device upon which an individual may ride that satisfies all of the following:

(A) The device is equipped with all of the following:

1. A seat or saddle for use by the rider.

2. Fully operable pedals for human propulsion.

3. An electric motor of not greater than 750 watts.

(B) The device falls within one of the following categories:

1. *Class 1 electric bicycle.* As used in this subparagraph, "class 1 electric bicycle" means an electric bicycle that is equipped with an electric motor that provides assistance only when the rider is pedaling and that disengages or ceases to function when the electric bicycle reaches a speed of 20 miles per hour.

2. *Class 2 electric bicycle.* As used in this subparagraph, "class 2 electric bicycle" means an electric bicycle that is equipped with a motor that propels the electric bicycle to a speed of no more than 20 miles per hour, whether the rider is pedaling or not, and that disengages or ceases to function when the brakes are applied.

3. *Class 3 electric bicycle.* As used in this subparagraph, "class 3 electric bicycle" means an electric bicycle that is equipped with a motor that provides assistance only when the rider is pedaling and that disengages or ceases to function when the electric bicycle reaches a speed of 28 miles per hour.

§ 72.02 TRAFFIC LAWS APPLY TO PERSONS RIDING BICYCLES AND ELECTRIC BICYCLES.

Each person riding a bicycle or electric bicycle upon a roadway shall be granted all the rights and shall be subject to all the duties applicable to the driver of a vehicle by the laws of this state declaring rules of the road applicable to vehicles or by the traffic regulations of the city applicable to vehicles or by the traffic regulations of the city applicable to the driver of a vehicle, except as to special regulations in this chapter pertaining to bicycles and electric bicycles, and except as to those provisions of laws and regulations which, by their nature, can have no application.

§ 72.03 RESPONSIBILITY OF PARENTS AND GUARDIANS.

No parent of any child, nor guardian of any ward, shall authorize or knowingly permit any such child or ward to violate any of the provisions of this chapter.

OPERATING REGULATIONS

§ 72.15 OBEDIENCE TO TRAFFIC-CONTROL DEVICES.

(A) Each person operating a bicycle or electric bicycle shall obey the instructions of official traffic-control signals, signs, and other control devices applicable to vehicles, unless otherwise directed by a police officer.

(B) Whenever authorized signs are erected indicating that no right or left or “U” turn is permitted, no person operating a bicycle or electric bicycle shall disobey the direction of any sign, except where such person dismounts from the bicycle or electric bicycle to make any such turn, in which event such person shall then obey the regulations applicable to pedestrians.

§ 72.16 RIDING ON SEAT; NUMBER OF RIDERS.

(A) No person propelling a bicycle or electric bicycle shall ride other than astride a permanent and regular seat attached thereto.

(B) No bicycle or electric bicycle shall be used to carry more persons at one time than the number for which it is designed and equipped.

§ 72.17 RIDING ON ROADWAYS AND BICYCLE PATHS.

(A) Each person operating a bicycle or electric bicycle upon a roadway shall ride as near to the right-hand side of the roadway as practicable, exercising due care when passing a standing vehicle or one proceeding in the same direction.

(B) No person riding a bicycle or electric bicycle upon a street or highway shall ride more than two abreast, except on paths or parts of roadways set aside for the exclusive use of bicycles and electric bicycles.

(C) Whenever a usable path for bicycles and electric bicycles has been provided adjacent to a street or highway, bicycle and electric bicycle riders shall use such path and shall not use the street or highway.

(D) Only bicycles and class 1 electric bicycles are permitted to operate on linear paved trails located within the City, unless otherwise regulated. Class 2 and class 3 electric bicycles are prohibited.

(E) Only bicycles are permitted to operate on nonmotorized, natural surface trails.

(F) Bicycles and electric bicycles are permitted to operate on motorized, natural surface trails within the City.

§ 72.18 SPEED.

No person shall operate a bicycle or electric bicycle at a speed greater than is reasonable and prudent under the condition then existing or as otherwise detailed herein or by state law.

§ 72.19 EMERGING FROM ALLEY OR DRIVEWAY.

Individuals operating a bicycle or electric bicycle shall at all times operate said bicycle or electric bicycle with due care and caution. The operator of a bicycle or electric bicycle, emerging from an alley, driveway, or building, shall, upon approaching a sidewalk or the sidewalk area extending across any alleyway, yield the right-of-way to all pedestrians approaching on said sidewalk or sidewalk area and upon entering the roadway, shall yield the right-of-way to all vehicles approaching on said roadway.

§ 72.20 CLINGING TO VEHICLES.

No person operating a bicycle or electric bicycle shall attach the same or himself/herself to any vehicle upon a roadway.

§ 72.21 CARRYING ARTICLES.

No person operating a bicycle or electric bicycle shall carry any package, bundle, or article which prevents the rider from keeping both hands upon the handle bars.

§ 72.22 PARKING.

No person shall park a bicycle or electric bicycle upon a street other than upon the roadway against the curb or upon the sidewalk in a rack to support the bicycle or electric bicycle or against a building or at the curb, in such manner as to afford the least obstruction to pedestrian traffic.

§ 72.23 RIDING ON SIDEWALKS.

(A) The Director of Public Safety or his/her designee is authorized to erect signs on any sidewalk, street, or roadway prohibiting the riding of bicycles or electric bicycles thereon by any person, and when such signs are in place, no person shall disobey the same.

(B) Whenever any person is riding a bicycle or electric bicycles upon a sidewalk, such person shall yield the right-of-way to any pedestrian and shall give audible signal before overtaking and passing such pedestrian.

§ 72.24 LAMPS AND OTHER EQUIPMENT ON BICYCLES AND ELECTRIC BICYCLES.

(A) Each bicycle and electric bicycle when in use at night-time shall be equipped with a lamp on the front which shall emit a white light visible from a distance of at least 500 feet to the front and with a red reflector on the rear of a type which shall be visible from all distances from 100 feet to 600 feet to the rear when directly in front of lawful lower beams of headlamps on a motor vehicle. A lamp emitting a red light visible from a distance of 500 feet to the rear may be used in addition to the red reflector.

(B) No person shall operate a bicycle or electric bicycle unless it is equipped with a bell or other device capable of giving a signal audible for a distance of at least 100 feet except that a bicycle or electric bicycle shall not be equipped with nor shall any person use upon a bicycle or electric bicycle any siren or whistle.

(C) Every bicycle and electric bicycle shall be equipped with a brake which will enable the operator to make the braked wheels skid on dry, level, clean pavement.

RENTALS

§ 72.35 RENTAL AGENCIES.

A bicycle or electric bicycle rental agency shall not rent or offer any bicycle or electric bicycle for rent unless such bicycle or electric bicycle is equipped with the lamps and other equipment required in this chapter.

§ 72.99 PENALTY.

Any person violating any of the provisions of this chapter shall be held responsible for a municipal civil infraction and prosecuted in accordance with the Municipal Civil Infractions Ordinance. The fine for violation of a municipal civil infraction under this chapter shall not exceed $50. Any minor who violates any provision of this chapter

shall be dealt with by the juvenile division of the probate court or as prescribed by the laws of the state."

Section 2. Repealer. This Ordinance expressly repeals all City ordinances and parts of ordinances in conflict with this Ordinance.

Section 3. Severability. If any provision of this Ordinance is declared invalid for any reason, that declaration does not affect the validity of all other sections of this Ordinance.

Section 4. Effective Date. This Ordinance takes effect 30 days after its adoption.

Memorandum

Mt. Pleasant [meet here]

TO: Aaron Desentz, City Manager

FROM: Jason Moore, DPW Director

DATE: May 14, 2025

SUBJECT: Adopt Resolution in Support of CDBG (WRI) Grant

Request
The City Commission is requested to adopt a resolution in support of the Community Development Block Grant Water Related Infrastructure Program.

Reason
The City was recently informed of the availability of a Water-Related Infrastructure Community Development Block Grant (CDBG) through the Michigan Economic Development Corporation. As part of the grant application process, a public hearing has been scheduled to receive public comments concerning the proposed project.

The Division of Public Works is seeking $2.5M in grant funding to replace the sludge drying beds and sludge tank at the Water Resource Recovery Facility. To strengthen the competitiveness of the application during the award phase, the City will contribute an 11% match of $275,000 from the plant's reserve fund.

The Capital Improvement Plan (CIP) already schedules the drying beds for rehabilitation this year and the sludge holding tanks for 2028. These projects were excluded from Phases I and II of WRRF construction because the drying beds could be handled in-house, and in 2021 when overall planning for WRRF rehabilitation started, the sludge tanks still had several years of usable life. If awarded, this grant would enable more extensive rehabilitation, reducing costs beyond the current CIP timeline. The funds already planned for these projects will serve as the grant match.

Recommendation
I recommend the City Commission adopt the attached resolution for inclusion in the 2025 CDBG grant application.

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Community Development Block Grant

WATER-RELATED INFRASTRUCTURE

APPLICATION

For eligible activities administered by the Michigan Economic Development Corporation (MEDC)
on behalf of the Michigan Strategic Fund (MSF)

Michigan Strategic Fund
c/o Michigan Economic Development Corporation
Community Development Block Grant
300 North Washington Square, Lansing, MI 48913
CDBG@michigan.org

03.25.25

IMPORTANT: Refer to the separate **Instruction** document when completing the Community Development Block Grant Infrastructure (CDBG) Application. The review of the proposed project will be based solely on the Unit of General Local Government's (UGLG's) responses and attachments. The MEDC will not seek clarifications. The numbered sections below coincide with the Instructions.

1. UNIT OF GENERAL LOCAL GOVERNMENT (UGLG) IDENTIFICATION SUMMARY			
		FUNDING SOURCE TOTALS	
Unit of General Local Government (UGLG)	**City of Mt. Pleasant**	CDBG	$ **2,500,000**
Street/PO Box	**320 W Broadway**	UGLG	$ **275,000**
City	**Mt. Pleasant**	Other	$
County	**Isabella**	Other	$
State/Zip	**MI 48858**	Other	$
Chief Elected Official Name	**Boomer Wingard**	Other	$
Chief Elected Official Title	**Mayor**	**Total**	$ **$2,275,000**
Chief Elected Official Email	**bwingard@mt-pleasant.org**		
UGLG Project Contact (PC) Name	**Lauren Baker**	Refer to Section 1 of the Instructions: 1(C) - UGLG's SAM.gov UEI# **JA14QYRJKY11** 1(D) - UGLG's Federal Tax ID # **38-6004717** 1(E) - UGLG's Fiscal Year End **December 31**	
UGLG PC Title	**Grant Coordinator**		
UGLG PC Address	**320 W. Broadway Mt. Pleasant, MI**		
UGLG PC Telephone Number	**(989) 779-5379**		
UGLG PC Fax Number			
UGLG PC E-Mail Address	**lbaker@mt-pleasant.org**		

2. STATE GOVERNMENT REPRESENTATION			
Senator Name	**Roger Hauck**	Senate District	**99**
Representative Name	**Jerry Neyer**	House District	**92**

3. FEDERAL GOVERNMENT REPRESENTATION			
Representative Name	**John Moolenaar**	Congressional District	**2**

4. AUTHORIZED UGLG OFFICIAL			
Name and Title	**Aaron Desentz, City Manager**	E-Mail Address	**adesentz@mt-pleasant.org**

5. ELIGIBILITY REQUIREMENTS

A. Check all eligibility requirements that apply. To qualify, all must be applicable:

☒ The UGLG is a community where 51% of the individuals reside in low to moderate income households (Question 11A). A list of eligible communities can be found on the posted document titled HUD Low-Moderate Income -ACS 2020.

☒ The project will be completed by December 31, 2027

☒ The grant request for traditional infrastructure is between $500,000 and $2,500,000.

☒ The UGLG has clearly demonstrated that the proposed project benefits the entire Low- and Moderate- Income Community (Question 11B).

☒ The proposed project is located on property owned by the UGLG and/or only an easement is needed.

☒ The UGLG has a maintenance plan for the proposed project (Section 12, Attachment E).

☒ The UGLG has a set of project plans and specifications (Section 12, Attachment L)

☒ The UGLG does not have an open CDBG Grant or MSF CDBG Award (An open grant is defined as a grant where a final disbursement request has not yet been submitted)

Comments:

6. PRIORITIES

A. Check all priorities that apply:

☒ The need for the proposed project has been clearly defined (Question 10(C)) and supports and addresses the Health, Sanitation, and Security needs of the community

☒ The community is a Low to Moderate income Community
- ☐ 51-55%
- ☒ 56-60%
- ☐ 61-65%
- ☐ 66%-70%
- ☐ 71% and above

☒ The community has leveraged local matching funds
- ☒ 11-24
- ☐ 25% and above

Comments:

7. ADMINISTRATION

A. Identify who will be responsible for administering the proposed project (Check One).
NOTE – Administrative contracts cannot be signed until authorized by the MEDC.

☒ **A MEDC CGA will administer the project**. The CGA has not yet been selected and the contract amount is unknown. The contract has not yet been signed, the MSF will fund the costs, and the administration line item on the CDBG budget (Attachment A) has been left blank.

☐ **A MEDC CGA on the staff of the UGLG will administer the project**. These costs are not eligible as match or CDBG reimbursement. The administration line item on the CDBG budget (Attachment A) has been left blank. Provide the name and contact information for the MEDC CGA person at the UGLG who will be responsible for administering the proposed project:

Name:
Business Address:
Phone #:
E-mail:

8. UGLG CAPACITY AND CONFLICT OF INTEREST

A. Does the UGLG have any unresolved CDBG grant issues and/or findings?
☐ Yes
☒ No

If yes, please provide the grant number and explain the issues and/or findings:

B. Conflict of Interest, check all that apply:
☐ Employees, agents, consultants, officers, elected or appointed officials of the UGLG will obtain a financial interest or benefit from a CDBG assisted activity or will have an interest in any contract, subcontract or agreement with respect thereto, or in the proceeds hereunder, either for themselves or for those with whom they have family or business ties, during their tenure or for one year thereafter.
☐ Officials and staff of the UGLG will be a party to contracts involving the procurement of goods and services assisted with CDBG funds.
☒ No conflicts.

9. OPTIONAL-UGLG FUNDING SOURCES

A. If applicable, please check the specific funding source(s) that the UGLG's committed cash match will be comprised of. Please note that a local (UGLG) cash match is not required
****SPECIAL ASSESSMENTS ARE NOT ALLOWED****
☐ General Fund
☒ Road, Water, and/or Sewer Funds
☐ DDA or other like district Funds
☐ Bonding (See instructions for limitations)
☐ Other. Describe other funds:

B. If applicable, please check the specific funding source(s) that the **"Other"** committed cash match will be comprised of:
☐ Other grants and/or loans where agreements are in place and the funds are immediately available
☐ Act 51 Funds that are immediately available
☐ Other public and/or private cash that is immediately available
☐ Other funds that are immediately available.

Describe ALL "Other" funds:

10. PROJECT SCOPE AND PROGRAM REQUIREMENTS

A. Compliance Requirements. Check all that apply:

- ☐ The project will impact historic properties or archaeological sites and districts.
- ☐ The project will impact wetlands.
- ☐ The project is located in a floodplain and/or will impact a floodplain.
- ☐ The project is located in a coastal zone.
- ☒ The project will require local, state, and federal permits.
- ☐ The project will result in the acquisition of easements.
- ☐ The project will result in the demolition or conversion of residential dwelling units, both occupied and vacant.
- ☐ The project will result in temporary or permanent relocation of businesses, non-profit organizations, homeowners, or tenants.
- ☐ The project will result in special fees (i.e., tap in / hookup fees, special assessments).
- ☐ None of the above

Describe all that apply: **State permit will be required.**

B. Provide a clear and concise description of the overall proposed project and include a description of all project related activities.

Demolish existing Sludge Drying Beds and Sludge Holding Tank at the Water Resource Recovery Facility and reconstruct Sludge Drying Beds and Sludge Holding Tank of a similar design and size, in the same location.

C. Based on the priority criteria selected in Section 6 (A), clearly describe the need for the proposed project. **NOTE: All information that the Applicant wishes to be considered for scoring purposes needs to be included in the narrative (Section 10-C) below. Any information submitted elsewhere in the application will be viewed as back-up documentation and will not be considered for scoring purposes**.

Health, Sanitation, and Security:

The Sludge Drying Beds (SDBs) and Sludge Holding Tank (SHT) at the City of Mt. Pleasant's Water Resource Recovery Facility are essential components of the community's wastewater management system. However, both systems have reached the end of their useful life and are now posing serious risks to public health, environmental safety, and the reliable operation of the facility. Replacing these aging structures is a critical investment in the health, sanitation, and security of our community.

1. Protecting Public Health and Sanitation

The SHT, constructed in 1985, is showing signs of severe deterioration. The tank's lid, with an expected lifespan of 30 years, has degraded to a dangerous extent and may already be leaking. This allows rainwater to enter the tank, potentially compromising sludge treatment and increasing the risk of system overflow or contamination. Worse still, if the bottom of the tank were leaking, the problem could go undetected — posing an invisible but significant risk to soil and groundwater quality.

The SDBs, originally built in 1980, have also far exceeded their effective lifespan. Though typically designed to last 30 to 50 years, these beds were never efficient, and their outdated design fails to meet modern environmental and engineering standards. They are currently unable to properly remove sand and gravel from incoming sludge, which compromises the effectiveness of downstream treatment processes and undermines overall sanitation.

2. Preserving Critical Infrastructure

In addition to compromising sanitation, the presence of sand and gravel in the sludge can damage downstream equipment leading to unexpected breakdowns and costly repairs. Such breakdowns could potentially put the entire

treatment system offline and directly impact the facility's ability to provide reliable wastewater treatment, risking public exposure to untreated or poorly treated effluent.

The proactive approach of reconstructing the drying beds safeguards millions of dollars in existing equipment and avoids emergency repair costs and service disruptions.

Conclusion

The need to replace the Sludge Drying Beds and Sludge Holding Tank is urgent and unavoidable. Continued reliance on these deteriorating structures endangers public health, undermines sanitation, and puts critical infrastructure at risk. Investing in modern, efficient, and secure systems will ensure that the Water Resource Recovery Facility can continue to protect our community's health, uphold environmental standards, and maintain reliable service for decades to come.

D. Lead and Copper Rule: The purpose of the Lead and Copper Rule (LCR) is to protect public health by minimizing lead and copper levels in drinking water. Lead and copper enter drinking water mainly from corrosion of lead and copper containing plumbing materials. The rule establishes action levels (AL) for lead and copper based on a 90th percentile level of tap water samples. An action level exceedance is not a violation but triggers other requirements to minimize exposure to lead and copper in drinking water, including water quality parameter monitoring, corrosion control treatment, source water monitoring/treatment, public education, and lead service line replacement. All community water supplies and non-transient noncommunity water supplies are subject to the LCR requirements.

☐ The proposed project activities trigger LCR requirements and the project includes any/all statutorily required replacement of lead or galvanized service lines.

☒ The proposed project does not trigger LCR requirements.

E. What is the square footage of the public space being improved or reactivated?
9,800 square feet

F. In the below space, provide an overall project schedule that includes the anticipated start and completion dates (attachments are not acceptable).

Activities	Start Date	End Date
Design Engineering	**09/01/2024**	**12/31/2024**
Easement acquisition, if applicable	**N/A**	**N/A**
Bidding	**01/12/2026**	**02/24/2026**
Construction	**04/01/2026**	**11/01/2026**

Comments regarding timeline (i.e. Design Engineering was completed prior to this Application; Design Engineering will be paid locally and will be completed prior to the Grant Agreement BUT ONLY with MEDC's written authorization; easements will not be required, etc.):

Easements are not required.

11. NATIONAL OBJECTIVE

A. What percentage of the UGLG is comprised of low- and moderate-income persons? A list of eligible communities can be found on the posted document titled HUD Low-Moderate Income -ACS 2020 list.

58%

B. Explain how the CDBG funded improvements will benefit the entire low- and moderate-income area.

Replacing the sludge drying beds (SDBs) and sludge holding tank (SHT) will provide wide-reaching benefits that enhance public health, protect the environment, and ensure the long-term reliability of wastewater services for the entire community.

1. **Improved Public Health and Sanitation**
   Modernizing these critical systems will ensure that wastewater is treated more effectively and safely. This reduces the risk of leaks, overflows, and contamination—safeguarding drinking water sources and minimizing exposure to harmful pathogens and pollutants.

2. **Environmental Protection**
   Upgraded infrastructure will prevent untreated or poorly treated sludge from entering the environment. Proper containment and filtration reduce the risk of groundwater pollution and help maintain clean local waterways, which benefits both people and wildlife.

3. **Reliable Wastewater Service**
   By replacing outdated and failing components, the project will reduce equipment failures and service disruptions. This ensures the facility can continue to operate efficiently, even during storms or high-demand periods, protecting homes, businesses, and public spaces from wastewater-related issues.

4. **Long-Term Cost Savings**
   Preventing equipment damage from sand and gravel, avoiding emergency repairs, and improving overall efficiency will reduce operational costs over time. This helps stabilize utility rates and ensures public funds are used more effectively.

5. **Compliance and Resilience**
   The upgraded systems will meet modern engineering and regulatory standards, strengthening the facility's compliance and resilience. This prepares the community for future challenges, including population growth and climate-related pressures.

ATTACHMENT		TITLE (use templates when provided)
☒	**A**	Project Budget
☒	**B**	Authorizing Resolution
☒	**C**	Cost Estimates (preliminary)
☒	**D**	Detailed Map, showing all project activities
☒	**E**	Maintenance Plan If no, explain:
☒	**F**	Community Development Narrative If no, explain:
☒	**Gi**	UGLG Public Participation Certification
☒	**Gii**	***Published*** Public Hearing Notice

☐	**Giii**	Brief description of the public hearing
☒	**H**	Certifications
☒	**I**	Assurances
☐	**J**	Anti-Displacement and Relocation Assistance Plan. If no, explain: **No persons will be displaced as a result of the project.**
☒	**K**	Evidence of Need (See Section 6 Priority and Section 10, Question 10C)
☒	**L**	Project Plans and Specifications (preliminary), see Section 5 Eligibility) If no, explain:

ATTACHMENT	**TITLE**	
☐	**M**	Other Funding Sources including Local Bonds. If using bonds and/or other resources, evidence that the funds are available at the time of the application (Section 9, Question 9B) If not, local match will not consist of bonds and/or the proposed budget will not consist of Other Resources.
☐	**N**	Joint Application. If applicable, identify any other applications related to infrastructure that includes a Federal or State agency as a source of funds. If not, UGLG has not submitted other applications for infrastructure funding to Federal or State agencies.

ATTACHMENT A – CITY OF MT. PLEASANT PROJECT BUDGET

PROJECT BUDGET						
ACTIVITY COSTS	**CDBG**	**LOCAL**	**PRIVATE**	**OTHER**	**OTHER**	**TOTAL**
Administrative Services-CGA						
Engineering		$222,000				
Administrative-3rd Party Environmental						
Construction/Contingency	$2,500,000	$53,000				
GRAND TOTAL	$2,500,000	$275,000				$2,775,000

AUTHORIZING RESOLUTION

WHEREAS, the Michigan Strategic Fund has invited Units of General Local Government to apply for its Water-Related Infrastructure (WRI) Competitive Funding Round; and

WHEREAS, the City of Mt. Pleasant desires to request $2,500,000 in CDBG funds to implement improvements to the existing wastewater treatment plant, including but not limited to sludge drying beds and sludge holding tank; and

WHEREAS, the City of Mt. Pleasant commits local funds from its Water Resource Recovery Facility Reserve in the amount of $275,000; and

WHEREAS, the proposed project is consistent with the local Community Development Plan as described in the Application; and

WHEREAS, the proposed project will benefit all residents of the project area and fifty-eight percent of the residents of the City of Mt. Pleasant are low- and moderate-income persons as determined by census data provided by the U.S. Department of Housing and Urban Development; and

WHEREAS, local funds and any other funds to be invested in the project have not been obligated/incurred and will not be obligated/incurred prior to a formal grant award, completion of the environmental review procedures and a formal written authorization to obligate/incur costs from the Michigan Economic Development Corporation.

NOW, THEREFORE, BE IT RESOLVED that the City of Mt. Pleasant hereby designates the City Manager as the Environmental Review Certifying Officer, the person authorized to certify the Michigan CDBG Application, the person authorized to sign the Grant Agreement and payment requests, and the person authorized to execute any additional documents required to carry out and complete the grant.

Fishbeck Construction Cost Estimate

Project: Holding Tank A and Drying Bed Replacement
Location: City of Mt. Pleasant
Work: CDBG Grant Application

Date: 5/12/2025
Project No.: 2500865.00
Current ENR Index: N/A
Reviewer: BVZ/MBK

Item No.	Item Description	Unit	Est. Quantity	Unit Price ($)	Install Unit Cost	Total Cost ($)
	Excavation and Backfill	Cyd	1,500		75	112,500
	Demolition of existing	LS		150,000		150,000
	Drying Bed Concrete	Cyd	500	1,400		700,000
	Holding Tank Concrete	Cyd	500	1,400		700,000
	Access Hatch	Ea	2	20,000	10,000	60,000
	Decant pump	LS	1	50,000		50,000
	Site Piping Gravity, Underdrain	Lf	280	300		84,000
	Drying Bed Media	Cyd	100	65		6,500
	Electrical Instrumentation, and Controls	LS	1	75,000		75,000
						0
						0
						0
	SUBTOTAL					**1,940,000**
	PRIME CONTRACTOR OVERHEAD, PROFIT, AND GENERAL CONDITIONS (14%)					**272,000**
	CONSTRUCTION COST ESTIMATE					**2,220,000**
	CONTINGENCY (15%)					**333,000**
	ENGINEERING					**222,000**
	TOTAL PROJECT COSTS					**2,775,000**

ATTACHMENT D – DETAILED MAP

AREA OF WORK

NORTH

OVERALL SITE LAYOUT

SCALE: NO SCALE

fishbeck
Engineers | Architects | Scientists | Constructors

Hard copy is intended to be 11"x17" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

City of Mount Pleasant
Isabella County, Michigan

Sludge Holding Tank Imporovements
CDBG WRI Grant Application

PROJECT NO.
2500865

FIGURE NO.
1

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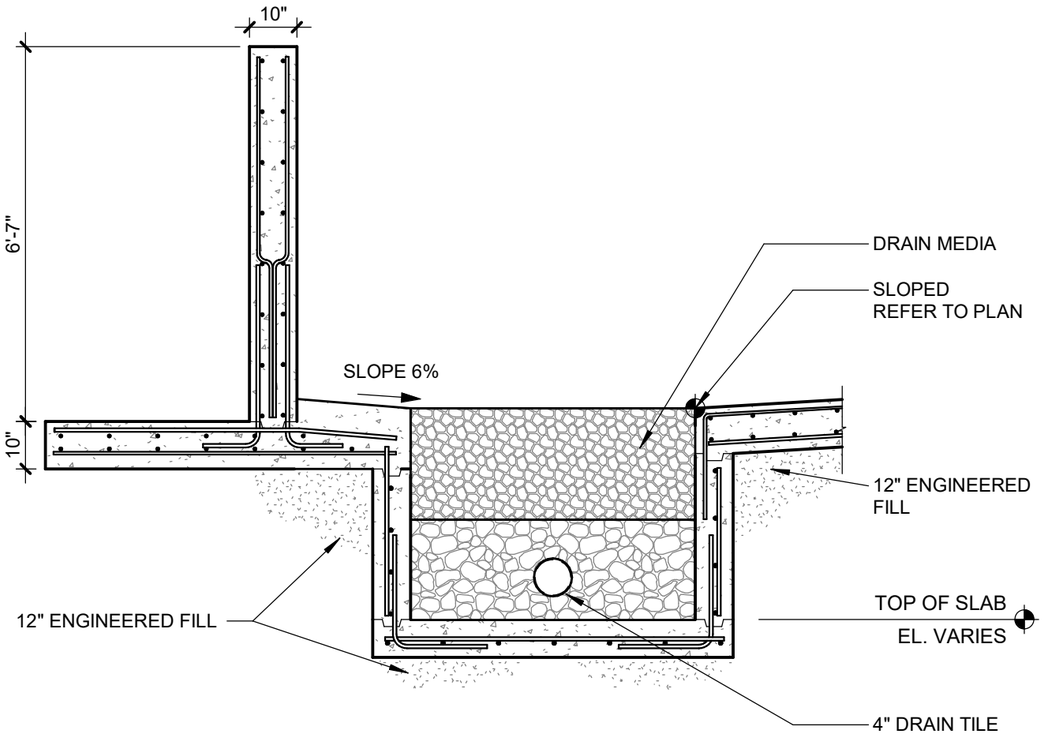

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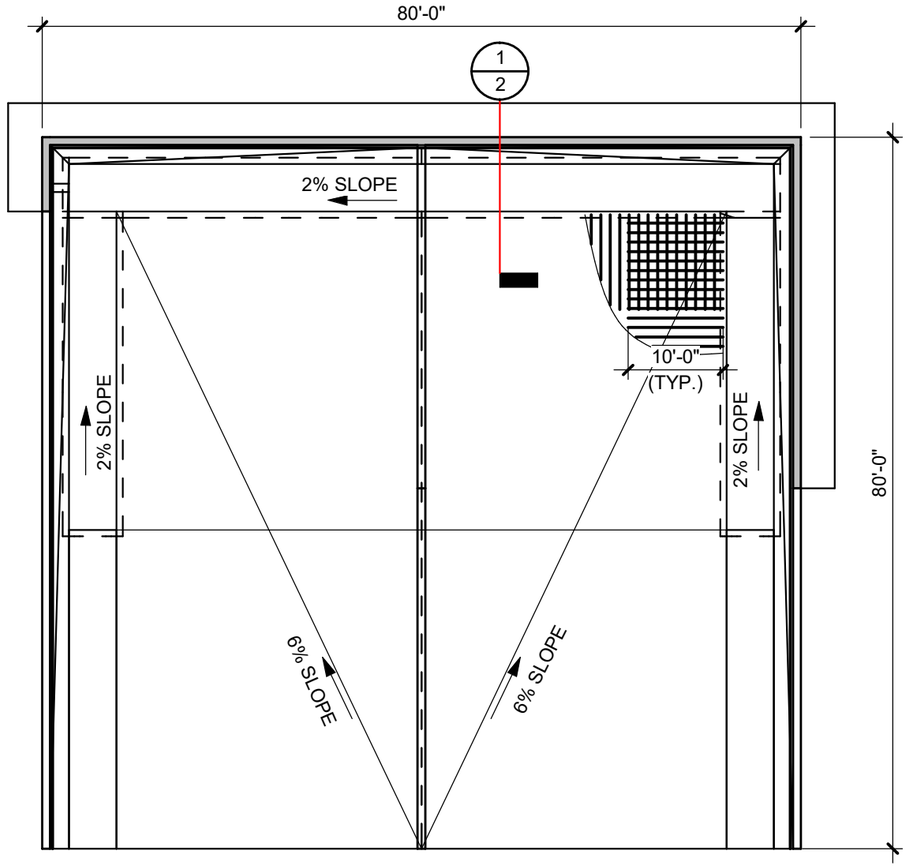

NORTH

SLUDGE DRYING BEDS PLAN

SCALE: NOT TO SCALE

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Hard copy is intended to be 11"x17" when plotted. Scale(s) indicated and graphic quality may not be accurate for any other size.

City of Mount Pleasant

Isabella County, Michigan

Sludge Drying Beds and Sludge Holding Tank Improvements

CDBG WRI Grant Application

PROJECT NO.
2500865

FIGURE NO.
2

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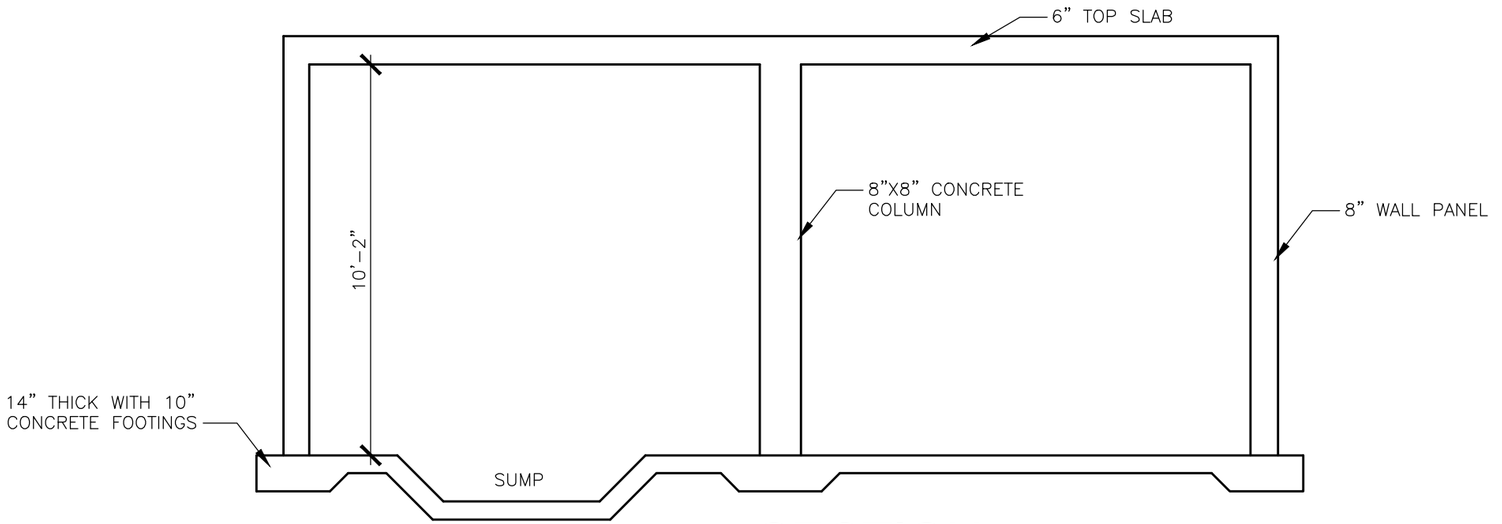

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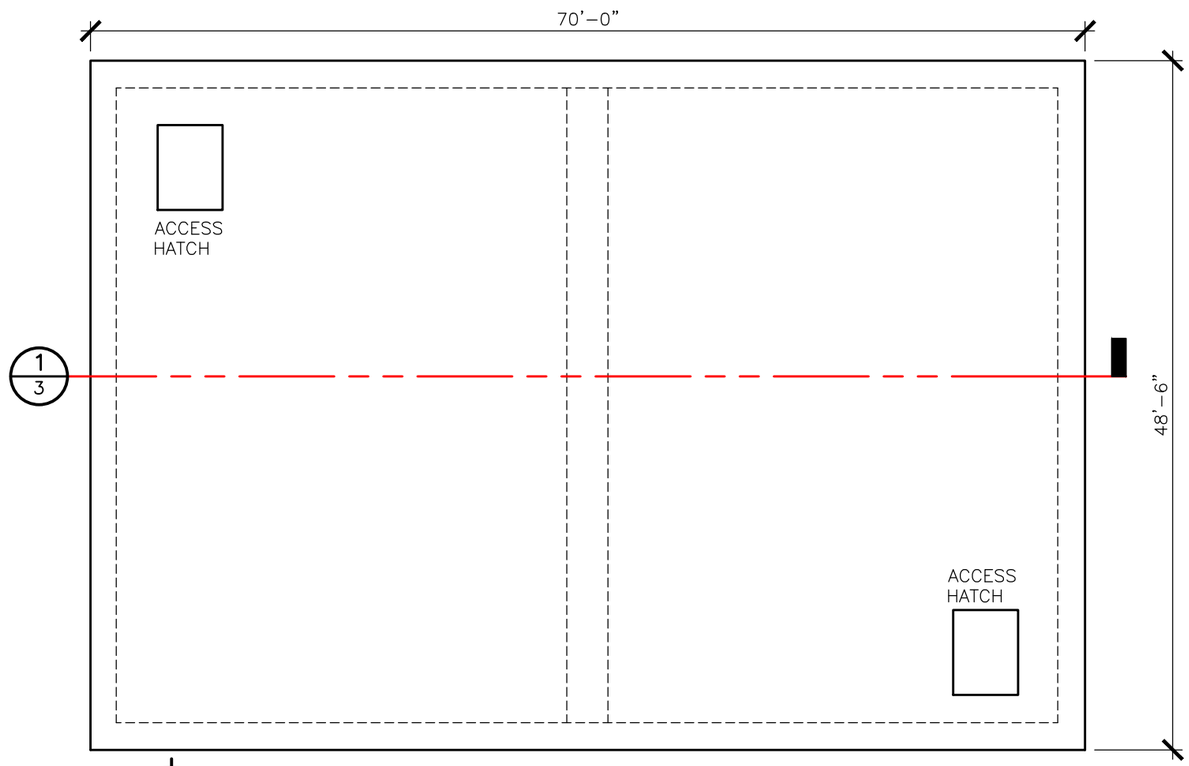

NORTH

SLUDGE HOLDING TANK PLAN

NO SCALE

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City of Mount Pleasant

Isabella County, Michigan

Sludge Drying Beds and Sludge Holding Tank Improovements

CDBG WRI Grant Application

PROJECT NO.

2500865

FIGURE NO.

3

ATTACHMENT E – MAINTENANCE PLAN

The City has a detailed operations and maintenance plan for all wastewater treatment plant assets. This includes routine maintenance tasks like inspections, cleaning, and servicing, as well as preventive maintenance measures to extend equipment life and minimize downtime. The City maintains a schedule consisting of Daily, Weekly, monthly and annual maintenance that varies by equipment and treatment process. New assets to be constructed as part of the proposed improvements can be added to this existing operation and maintenance plan. In general, pumps and mechanical equipment are maintained in accordance with manufacturer recommendations. Valves are exercised at least twice per year. Repairs are made as necessary to maintain proper system operation. The operations and maintenance budget is adjusted annually to properly maintain all WWTP assets.

I. Statement of Needs

The City of Mt. Pleasant is currently facing a combination of challenges tied to aging infrastructure, gaps in affordable housing, and service limitations for low- and moderate-income residents. As part of its 2050 Master Plan, the City recognizes that ongoing growth and demographic changes require adaptive strategies to improve quality of life while supporting equitable access to resources.

Public Infrastructure Needs

Mt. Pleasant's street, water, sewer, and stormwater infrastructure is aging and increasingly unable to meet contemporary standards. The city has struggled with funding shortfalls, leading to delayed or deprioritized projects. Deferred maintenance on roads has already resulted in deterioration, with more streets being rated in poor condition due to insufficient road funding. Likewise, while major investments in the Water Resource Recovery Facility (WRRF) are ongoing, over $25 million in unmet funding needs remain for essential upgrades between the water utilities.

Stormwater infrastructure also faces limitations in capacity and dependability, which heightens flood risks and reduces system reliability during severe weather events. The Capital Improvement Plan (CIP) notes a consistent need for sidewalk replacements and non-motorized pathway enhancements, especially to support walkability and safety for all residents.

Housing Needs

According to the 2021 MSHDA Housing Gap Analysis, Mt. Pleasant has a deficit of 79 owner-occupied and 731 rental units. These gaps are more pronounced for low- and moderate-income (LMI) residents, particularly seniors, the workforce, and those experiencing homelessness. Furthermore, Mt Pleasant's single-person and non-family households have been increasing, while housing availability and construction rates are low, exacerbating affordability issues. Key issues include:

- Lack of attainable senior and family housing options due to high construction costs and low for-sale and for-rent inventory available to this population sector.
- Overconcentration of student housing and barriers to repurposing "missing middle" housing developments (e.g., duplexes, townhomes) to other audiences by landlords.
- A mismatch between high rental costs and income levels, due to the market being accustomed to charging per room prices for students.
- Limited availability of emergency shelters and inability of the local Housing Commission to designate project-based vouchers to increase the inventory of affordable units.

II. Long-Term Activities (2+ Years)

1. **Infrastructure Expansion and Modernization**
    - Complete full WRRF upgrades and seek additional funding for unmet water system needs (e.g., satellite read meters, well system improvements).

- Continue phased storm sewer upsizing (e.g., North Drive, Oak Street) in coordination with road reconstruction efforts.

2. **Comprehensive Housing Strategy Implementation**
    - Encourage the construction of missing middle housing (duplexes, triplexes, ADUs) to audiences other than students such as seniors, families, and single-person households.
    - Apply for housing grants and establish partnerships with local housing partners and developers to create more inventory and a wider range of housing options.
    - Establish a Housing Trust Fund or similar financial tool to support affordable housing development for LMI populations.
    - Encourage mixed-income housing development downtown and in walkable corridors aligned with transit and job access.

3. **Neighborhood Revitalization and Beautification**
    - Fund and implement a citywide neighborhood identity and beautification program (tree planting, signage, façade improvement).
    - Expand code enforcement and maintenance efforts to preserve housing quality, especially in high-turnover rental areas.
    - Improve cultural and economic integration between CMU students, permanent residents, and underserved populations through inclusive design and community engagement initiatives.

III. Short-Term Activities (1–2 Years)

1. **Infrastructure Rehabilitation and Maintenance**
    - Prioritize repair and resurfacing of critical Major and Local Streets using redirected storm sewer funds to offset budget limitations.
    - Begin water plant upgrades using DWSRF funding ($10M awarded) to mitigate infrastructure failure risk.
    - Initiate drainage improvements per the 2021 Stormwater Master Plan, such as the Franklin–Preston to Bellows drainage project.

2. **Sidewalk and Non-Motorized Path Improvements**
    - Continue annual sidewalk replacements at high-priority hazard locations, with a goal of addressing at least 1.1 miles/year.
    - Begin Phase I design and implementation of safe pedestrian and bike connections along Mission Street and into surrounding neighborhoods.

3. **Affordable Housing Action Planning**

- Update the housing market study to inform developers of current housing market opportunities and identify zoning adjustments for higher-density and mixed-use housing options.
- Launch a public-private partnership pilot to incentivize rehabilitation of vacant or underused rental units for LMI occupancy.
- Expand support for local nonprofits offering emergency housing and transitional shelter.

IV. Effect of the Proposed CDBG Project

Upgrading the Sludge Drying Beds and Sludge Holding Tank will improve the overall reliability and efficiency of the City of Mt. Pleasant's Water Resource Recovery Facility, ensuring that wastewater is properly processed and treated. This protects residents from health risks such as groundwater contamination or exposure to harmful bacteria and pathogens.

The improvements will also enhance the environmental quality of the community. It will ensure that the Water Resource Recovery Facility continues to supply biosolids to local farmland as fertilizer and not have to send several tons of material to the landfill. Modernized infrastructure will also reduce the risk of accidental discharges and leaks, helping to preserve local ecosystems, protect waterways, and ensure clean, safe surroundings for both people and wildlife.

Economically, the project will reduce long-term operational costs by preventing equipment damage and minimizing emergency repairs. This makes the system more cost-effective and dependable, helping to stabilize utility expenses for residents.

V. Displacement Plan

No persons will be displaced as a result of this project.

ATTACHMENT Gi – UGLG PUBLIC PARTICIPATION CERTIFICATION FORM

1. The UGLG has furnished its citizens with information concerning the amount of funds available and being applied for, and the proposed community development and housing activities to be undertaken. This includes the estimated amount proposed to be used for activities that will benefit persons of low and moderate income and the plans for minimizing displacement of persons.
2. The UGLG has published a public notice in such manner to afford affected citizens an opportunity to examine and submit comments on the proposed application and community development and housing activities.
3. One or more public hearings have been held to obtain the views of citizens on the proposed application and community development and housing needs.
4. Citizens have been provided reasonable access to the proposed application and related information on community development and housing needs.
5. The UGLG will provide its citizens with reasonable notice of, and opportunity to comment on, any substantial change proposed to be made in the use of funds if funds are received.
6. The UGLG provided for and encouraged citizen participation, with particular emphasis on participation by persons of low and moderate income, residents of slum and blight areas and of areas in which Section 106 funds are proposed to be used, and in the case of grantees described in Section 106(a), provided for participation of residents in low and moderate income neighborhoods as defined by the local jurisdiction. Opportunities to participate must be made available by advertising in publications, which are distributed in the slum and blight areas and the low- and moderate-income neighborhoods.
7. The UGLG provided citizens with reasonable and timely access to local meetings, information, and records relating to the applicant's proposed use of funds, as required by regulations of the Secretary, and relating to the actual use of funds under this title.
8. The UGLG provided for technical assistance to groups representative of persons of low and moderate income that request such assistance in developing proposals with the level and type of assistance to be determined by the grantee.
9. The UGLG provided for public hearings to obtain citizen views and to respond to proposals and questions at all stages of the community development program, including at least the development of needs, the review of proposed activities, and review of program performance, which hearings shall be held after adequate notice, at times and locations convenient to potential or actual beneficiaries, and with accommodation for the handicapped. Review of program performance shall apply to previously funded CDBG grants.
10. The UGLG has identified how the needs of non-English speaking residents will be met in the case of public hearings where a significant number of non-English speaking residents can be reasonably expected to participate. If 51% of the expected participants are non-English speaking, the hearings will be advertised in a non-English publication available to those residents. A person fluent in their language must be available to discuss the project and respond to their questions at the hearings.

May 19, 2025

Aaron Desentz, City Manager — Official Date

RECEIPT

05/13/25

MediaNews Group

MICHIGAN GROUP

Account:	532011
Name:	ADDIE PRITCHARD
Company:	CITY OF MT PLEASANT - CITY CLERK
Address:	320 W BROADWAY MT PLEASANT, MI 48858
Telephone:	(989) 779-5300
Fax:	(000) 000-0000
Description:	THE CITY OF MOUNT PLEASANT NOTICE OF

Date:	05/13/25
Start Date:	05/13/25 Stop Date: 05/14/25
Class:	1201 - Legal Notices
Ad ID:	2717816
Ad Taker:	CRRBUDD
Sales Person:	Robin Budd (200317)
Words:	244
Lines:	40
Agate Lines:	86
Depth:	4.75
Inserts:	4
Blind Box:	
PO Number:	

Ad sample

THE CITY OF MOUNT PLEASANT NOTICE OF PUBLIC HEARING FOR MICHIGAN COMMUNITY DEVELOPMENT BLOCK GRANT (CDBG) FUNDING FOR THE WASTEWATER TREATMENT PLANT IMPROVEMENTS

The City of Mount Pleasant will conduct a public hearing on May27th at 7:00 PM at City Commission Chambers, Mt. Pleasant City Hall, 320 W. Broadway (City Hall) for the purpose of affording citizens an opportunity to examine and submit comments on the proposed application for a CDBG grant.

The City of Mount Pleasant proposes to request $2,500,000 in CDBG funds to implement improvements to the existing wastewater treatment plant, including but not limited to sludge drying beds and sludge holding tank. The proposed project will require the City of Mount Pleasant to commit to local funds in the amount of $275,000. The proposed project will benefit the entire community including 58% low to moderate income persons by maintaining the wastewater treatment plant. No persons or businesses will be displaced as a result of the proposed activities.

Further information including a copy of the City of Mount Pleasant's Community Development Plan and CDBG application will be available for review. To inspect the documents, please contact Jason Moore by email at jmoore@mt-pleasant.org or review at City Hall. Comments may be submitted in writing through May 27th or made in person at the public hearing.

Citizen views and comments on the proposed application are welcome.

City of Mount Pleasant
Jason Moore, Director of Public Works
(989) 779-5405

Published May 13 & 14, 2025

Total:	$196.60
Paid Amount:	$0.00
Amount Due:	$196.60

Publication

Morning Sun, morningstarpublishing.com

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Thank You ADDIE PRITCHARD!

ATTACHMENT H – CERTIFICATION BY THE APPLICANT UGLG FORM

The UGLG hereby certifies that it:

1. Possesses legal authority to submit a grant application;
2. Has in a timely manner:
    a. furnished its citizens information concerning the amount of funds available and being applied for, and the proposed community development and housing activities to be undertaken, including the estimated amount proposed to be used for activities that will benefit persons of low and moderate income and the plans for minimizing displacement of persons as a result of proposed activities and for assisting persons actually displaced;
3. published a public notice (a copy of which is attached) in such manner to afford citizens an opportunity to examine and submit comments on the proposed application and community development and housing activities;
4. held one or more public hearings to obtain the views of citizens on the proposed application and community development and housing needs; and
5. made the proposed application available to the public;
6. Will conduct and administer the grant in conformity with Public Law 88-352 and Public Law 90-284, and will affirmatively further fair housing;
7. Has developed the proposed application so as to give maximum feasible priority to activities which will benefit low and moderate income families or aid to the prevention or elimination of slum or blight; or to meet other community development needs having a particular urgency because existing conditions pose a serious and immediate threat to health or welfare of the community where other financial resources are not available to meet such needs;
8. Has developed a community development plan that identifies community development and housing needs and specifies both short and long term community development objectives that have been developed in accordance with the primary objective and requirements of the Title I Housing and Community Development Act of 1974, as amended;
9. Will not attempt to recover any capital costs of public improvements assisted in whole or in part with Title I funds by assessing any amount against properties owned and occupied by persons of low and moderate income, including any fee charged or assessment made as a condition of obtaining access to such public improvements, unless (A) Title I funds are used to pay the proportion of such fee or assessment that related to capital costs of such public improvement that are financed from revenue sources other than Title I funds; or (B) for purposes of assessing any amounts against properties owned and occupied by persons of low and moderate income who are not persons of very low income, and (name of local unit) certifies that it lacks sufficient Title I funds to comply with the requirements of clause (A);
10. Will adopt a policy of prohibiting the use of excessive force by law enforcement agencies within its jurisdiction against any individuals engaged in nonviolent civil rights demonstrations; and enforcing applicable State and local laws against physically barring entrance to or exit from a facility or location which is the subject of such nonviolent civil rights demonstrations within its jurisdictions;
11. No federal appropriated funds have been paid or will be paid, by or on behalf of the undersigned to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress an officer or employee of Congress, or an employee of a Member of Congress in connection with the awarding of any federal contract, the making of any federal grant, the making of any federal loan, the entering into of any cooperative agreement, and the extension, continuation, renewal, amendment, or modification of any federal contract, grant, loan, or cooperative agreement;
12. If any funds other than federal appropriated funds have been paid or will be paid to any person for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a federal contract, grant, loan, or cooperative agreement, the undersigned shall complete and submit Standard Form-LLL, "Disclosure Form to Report Lobbying," in accordance with its instructions;

13. The undersigned shall require that the language of this certification be included in the award documents for all sub awards at all tiers (including subcontracts, sub grants, and contracts under grants, loans, and cooperative agreements) and that all sub recipients shall certify and disclose accordingly;
14. Will comply with other provisions of Title I of the Housing and Community Development Act of 1987, as amended, and with other applicable laws.

Aaron Desentz, City Manager

May 19, 2025

Official Date

ATTACHMENT I – STATEMENT OF ASSURANCES FORM

The UGLG hereby assures and certifies that it has complied or shall comply with Title I of the Housing and Community Development Act of 1974, as amended (42 U,S.C. 5301), and related statutes and implementing rules, regulations, and guidelines applicable to projects financed under the Michigan CDBG program. Specific assurances and certifications include but are not limited to the following:

1. Compliance with grant and financial management guidelines in 2 CFR Part 200, et al.; Uniform Administrative Requirements, Cost Principles, and Audit Requirements for Federal Awards; Final Rule.
2. Compliance with Civil Rights and Equal Opportunity statutes as set forth in Title I of the Civil Rights Act of 1964 (Public Law 88-352), Title VIII of the Civil Rights Act of 1968 (Public Law 90-284), the Michigan Civil Rights Act 453 of 1976, the Michigan Fair Employment Practices Act (MCL 423, 301-423, 311), related statues and implementing rules and regulations.
3. Compliance with Labor Standards statutes as set forth in the Davis-Bacon Fair Labor Standards Act (40 U.S.C. 276a-276a-5), related statutes and implementing rules and regulations.
4. Compliance with Lead Based Paint Poisoning Prevention Act (42 U.S.C. 4831).
5. Compliance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (42 U.S.C. 4630) and implementing regulations.
6. Compliance with OMB Circular No. A-133, Audits of States, Local Governments and Non-Profit Organizations and implementing rules and regulations.
7. Compliance with Section 504 of the Rehabilitation Act of 1973, as amended, and implementing rules and regulations 24 CFR Part 8.
8. Authorized state officials and representatives will have access to all books, accounts, records, reports, files, and other papers, things, or property pertaining to the project in order to make audits, examinations, excerpts and transcripts; each contract or subcontract also shall provide for such success to relevant data and records pertaining to the development and implementation of the project.

The UGLG agrees to assume all of the responsibilities for environmental review, decision making and action as specified and required under the National Environmental Policy Act of 1969 (42 U.S.C. 4321) and Section 104 (f) of Title I of the Housing and Community Development Act and implementing regulations 24 CFR Part 58.

Aaron Desentz, City Manager

May 19, 2025

Official Date

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Engineers | Architects | Scientists | Constructors

1515 Arboretum Drive, SE
Grand Rapids, Michigan 49546

616.575.3824 | fishbeck.com

May 16, 2025
Project No. 2500865

Jason Moore
Director of Public Works
City of Mt. Pleasant
320 W. Broadway Street
Mt. Pleasant, MI 48858

City of Mt. Pleasant, Michigan, CDBG Application

The Water Resource Recovery Facility (WRRF) is responsible for treating all residential and commercial sanitary sewage generated in the City limits. The WRRF is a Michigan Department of Environment, Great Lakes and Energy (EGLE) approved septage receiving station, and accepts septage from area septic tank waste haulers. The City of Mt. Pleasant Wastewater Treatment Plant is located at 1301 North Franklin Street in the City of Mt. Pleasant, Michigan. The WRRF has served the community of Mt. Pleasant for almost 70 years, providing various degrees of treatment to the City's wastewater flows. The Plant has existed in some form since the late 1950s and currently consists of screening, grit removal, primary clarification, secondary treatment, clarification, and UV disinfection. Solids are anaerobically digested and stored in subgrade tanks for land application.

The proposed project areas include the Sludge Drying Beds (SDB) and the Sludge Holding Tank (SHT). These areas date back to the original Plant construction and need rehabilitation. The SDB help with drying of the sludge by draining the liquids from the sludge. This is a dedicated location of the Plant that serves collection system wastes, sludge from tanks, etc. The SDB have been performing poorly due to clogged drains and failing pipes that convey liquids from the sludge. The concrete part of the beds need rehabilitation due to age of the structure. The proposed project will include demolition of these beds and construction of new beds with similar design and size to the existing beds. The SHT is an underground tank that provides storage to digested sludge prior to land application. The tank has a capacity of 250,000 gallons. The tank is showing signs concrete failure causing possible health and safety concerns. The proposed project includes demolition of the existing tank and construction of a new tank in the same location. The tank will be 10 feet tall and constructed of precast concrete, complete with wall and roof panels. There will be access hatches and a sump provision, recessed in the concrete floor. Improvements and rehabilitations of these key processes will ensure continued treatment.

If you have any questions or require additional information, please contact me at 517.887.4099 or bvanzee@fishbeck.com.

Sincerely,

Brian Van Zee
Senior Water and Wastewater Engineer

By email

SECTION 02 41 19 – SELECTIVE DEMOLITION

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the modification, alteration, conversion, and renovation of existing structures:
   1. Be aware of the many incidental items which exist which must be demolished, relocated, or replaced in order to accomplish the remodeling work of trades.
   2. Include the price of such demolition, relocating, and replacement in the base Bid.
   3. These incidental items may or may not be indicated in the Contract Documents.
   4. Contractor and Subcontractors performing remodeling work are expected to be familiar with the unknown nature of existing utilities serving an area to be remodeled and shall calculate the base Bid to include the demolition, removal, relocation, and replacement of these utilities.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the pertinent provisions of the following:
   1. American National Standards Institute: ANSI A10.6 - Safety Requirements for Demolition Operations.
   2. ASTM: D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort.
   3. EPA: Rule 406(b) of the Toxic Substances Control Act of 1992.
   4. NFPA: NFPA 241 - Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.4 DEFINITIONS

A. Terms:
   1. Abandon:
      a. Remove an item to the extent that it is not visible and does not interfere with new construction.
      b. Portions of the abandoned item may be left in place.
      c. No abandoned items shall be left below new footings.
   2. Demolish:
      a. Remove existing items from their present location in the Project area and haul to an area outside of the Project area.
      b. Remove utilities serving these items.
   3. Relocate:
      a. Move existing items from their present location to another location in the Project area.
      b. Extend utilities serving the present location to the new location.
   4. Remove:
      a. Except for items indicated to be reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, demolished materials shall become Contractor's property.
      b. Remove existing items from their present location in the Project area and haul to an area outside of the Project area.
      c. Remove utilities serving these items.
   5. Replace:
      a. Remove existing items from their present location in the Project area, haul them to an area outside of the Project area, and furnish and install new items in the same or another location.
      b. Extend utilities serving the present location to the new location.
   6. Reuse: Move existing items from their present location to another location in the Project area. Extend utilities serving the present location to the new location.
   7. Historic Items:
      a. Historic items, relics, and similar object including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during selective demolition remain Owner's property.

b. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.5 DIVISION OF WORK

A. Work: In accordance with the General Conditions, Contractor is responsible for dividing the Work among the Subcontractors and Suppliers and for delineating the work to be performed by specific trades. The following are suggestions as to how the Work may be divided. This is not a complete list of the work:
   1. Contractor:
      a. Cut and patch walls, floors, and ceilings to allow for recessed utilities and ductwork.
      b. Remove and reinstall existing suspended ceilings to allow for above ceiling construction.
      c. Replace damaged units.
      d. Install new ceilings as indicated on the Drawings.
      e. Place sleeves in new concrete structures.
      f. Patch roof at new penetration and curbs and where existing penetrations and curbs are removed.
      g. Furnish and install new structural steel where required for reinforcement at floor, wall, and roof openings.
      h. Install fire stop and smoke stop systems at penetrations for ratings indicated in accordance with local building codes.
   2. Mechanical, Electrical, and Fire Protection Subcontractors:
      a. Furnish sleeves for use in new concrete construction.
      b. Install fire stop and smoke stop systems at utility penetrations in accordance with local building codes.
      c. Furnish and install sleeves in gypsum board and masonry construction.
      d. Core drill existing concrete for new utilities and sleeves after obtaining Engineer's review of locations.
      e. Remove and reinstall existing fire protection heads to allow for ceiling removal and installation.
      f. Furnish new heads, piping, and connections as required for completion of the Work.
   3. Miscellaneous:
      a. Each trade shall be financially responsible for cutting and patching for sleeves, penetrations, and installation of isolated components as necessary for its work unless herein specifically stated to the contrary.
      b. On renovation projects, cut and patch walls, floors, and ceilings to allow for continuous runs of recessed utilities and ductwork.
      c. Patching shall be done by the trade whose work is damaged.
      d. Costs caused by defective or ill-timed work shall be borne by the party responsible.
      e. Each trade shall do fitting of its own work as required to make its several components fit together or to receive the work of other trades.

1.6 SUBMITTALS

A. Predemolition Audio-video:
   1. Submit showing existing conditions of construction to remain that could be misconstrued as damage caused by construction activities.
   2. Including building and Site, as well as interior and exterior finishes.
   3. Submit prior to commencing Work.

1.7 QUALITY ASSURANCE

A. Qualifications: Engage an experienced firm that has specialized in demolition work similar to material and extent indicated for this Project.

B. Regulatory Requirements:
   1. Comply with governing EPA notification regulations before beginning selective demolition.
   2. Comply with hauling and disposal regulations of authorities having jurisdiction.
   3. Comply with ANSI A10.6 and NFPA 241.
   4. Comply with 29 CFR 1926.62-(OSHA Paint Standard).

C. Pre-Demolition Conference:
   1. Conduct pre-demolition conference at Site in accordance with in Division 01 Section “Project Meetings.”

2. Review methods and procedures related to selective demolition including, but not limited to, the following:
   a. Inspect and discuss condition of construction to be selectively demolished.
   b. Review structural load limitations of existing structure.
   c. Review and finalize selective demolition schedule and verify availability of materials, demolition personnel, equipment, and facilities needed to make progress and to avoid delays.
   d. Review requirements of work performed by other trades that rely on substrates exposed by selective demolition operations.

1.8 PROJECT CONDITIONS

A. Owner Occupancy:
   1. Owner will occupy portions of building immediately adjacent to selective demolition area.
   2. Conduct selective demolition so Owner's operations will not be disrupted.
   3. Provide not less than 72 hours notice to Owner of activities that will affect Owner's operations.

B. Access:
   1. Maintain access to existing walkways, corridors, and other adjacent occupied or used facilities.
   2. Do not close or obstruct walkways, corridors, or other occupied or used facilities without written permission from authorities having jurisdiction.

C. Conditions:
   1. Owner and Engineer assume no responsibility for condition of areas to be selectively demolished.
   2. Conditions existing at time of inspection for bidding purposes will be maintained by Owner as far as practicable.

D. Storage or sale of removed items or materials on Site will not be permitted.

E. Maintenance of Utilities:
   1. Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.

F. Unknown Hazardous Materials:
   1. It is not expected that hazardous materials will be encountered in the Work.
   2. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Engineer and Owner.
   3. Hazardous materials will be removed by Owner under a separate contract.

G. Lead Paint: Remove and remediate existing lead paint as required to comply with all codes and requirements while performing the requirements of the Work. Either remove lead paint completely or partially as required to achieve this.

1.9 WARRANTIES

A. Existing Warranties:
   1. Remove, replace, patch, and repair materials and surfaces cut or damaged during selective demolition, by methods and with materials so as not to void existing warranties.
   2. If possible, retain original installer or fabricator to patch exposed work that is damaged during selective demolition.
   3. If it is not possible to engage original installer or fabricator, engage another recognized, experienced, and specialized firm.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:
   1. Materials and workmanship shall conform to the requirements of other Sections of the Specifications.

2. Where no materials are specified in these specifications, use materials of an equivalent type, quality, and size to match those existing in other areas of the facility.
3. If none exist, use materials and workmanship recognized as of the highest quality in the industry.
4. Obtain Engineer's review of such material and workmanship.

B. Piping: Existing piping which is removed from its present location shall not be reused where new piping is required unless specifically noted on the Drawings.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that utilities have been disconnected and capped.

B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.

C. Inventory and record the condition of items to be removed and reinstalled, and of items to be removed and salvaged.

D. Conflicts:
1. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict.
2. Promptly submit written report to Engineer.

E. Survey, or engage a competent person to survey condition of the building, in accordance with requirements of OSHA, to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of the structure or adjacent structures during selective demolition operations.

F. Perform additional surveys as the work progresses to detect hazards resulting from operations to date.

3.2 UTILITY SERVICES

A. Maintain existing services indicated to remain and protect them against damage during selective demolition operations.

B. Interruptions:
1. Do not interrupt existing utilities serving occupied or operating facilities unless authorized in writing by Owner and other authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
3. Provide at least 72 hours notice to Owner if shutdown of service is required during changeover.

C. Utility Requirements:
1. Locate, identify, disconnect, and seal or cap off indicated utilities serving areas to be selectively demolished.
2. Owner will arrange to shut off indicated utilities when requested by Contractor.
3. Arrange to shut off indicated utilities with utility companies.
4. If utility services are required to be removed, relocated, or abandoned, before proceeding with selective demolition, provide temporary utilities that bypass areas of selective demolition and that maintain continuity of service to other parts of building.
5. Cut off pipe or conduit in walls or partitions to be removed.
6. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.

3.3 PREPARATION

A. Site Access and Temporary Controls:
1. Conduct selective demolition and debris removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.

2. Do not close or obstruct streets, walks, or other adjacent occupied or used facilities without permission from Owner and other authorities having jurisdiction.
3. Provide alternate routes around closed or obstructed traffic ways if required by governing regulations.
4. Erect temporary protection, such as walks, fences, railings, canopies, and covered passageways, where required by authorities having jurisdiction.
5. Protect existing Site improvements, appurtenances, and landscape features to remain.
6. Erect a plainly visible fence around drip line of individual trees or around perimeter drip line or groups of trees to remain.

B. Temporary Facilities:
1. Protection:
   a. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
   b. Provide protection to ensure safe passage of people around selective demolition area, and to and from occupied portion of building.
   c. Weather Protection:
      1) Provide temporary weather protection, during interval between selective demolition of existing construction on exterior surfaces and new construction, to prevent water leakage and damage to structure and interior areas.
      2) Where heating or cooling is needed and permanent enclosure is not complete, provide insulated temporary enclosures.
      3) Coordinate enclosures with ventilating and material drying or curing requirements to avoid dangerous conditions and effects.
   d. Protect walls, ceilings, floors, and other existing finish work that are to remain or that are exposed during selective demolition operations.
   e. Cover and protect furniture, furnishings, and equipment that have not been removed.
2. Shoring and Bracing:
   a. Provide and maintain shoring, bracing, or structural support to preserve stability and prevent movement, settlement, or collapse of construction to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.
   b. Strengthen or add new supports when required during progress of selected demolition.

3.4 POLLUTION CONTROLS

A. Dust Control:
1. Use water mist, temporary closures, and other suitable methods to limit spread of dust and dirt.
2. Do not use water when it may damage existing construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.
3. Wet mop floors to eliminate trackable dirt and wipe down walls and doors of demolition enclosure.
4. Vacuum carpeted areas.
5. Comply with governing environmental protection regulations.

B. Disposal:
1. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
2. Remove debris from elevated portions of building by chute, hoist, or other device that will convey debris to grade level in a controlled descent.

3.5 GENERAL

A. Demolish and remove existing construction only to the extent required by new construction and as indicated.

B. Methods:
1. Use methods required to complete the work within limitations of governing regulations.
2. Level by Level:
   a. Proceed with selective demolition systematically, from higher to lower level.
   b. Complete selective demolition operations above each floor or tier before disturbing supporting members on the next lower level.
3. Cutting Openings:
   a. Neatly cut openings and holes plumb, square, and true to dimensions required.
   b. Use cutting methods least likely to damage construction to remain or to adjoining construction.

c. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces.
d. Temporarily cover openings to remain.

4. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
5. Flame Cutting:
   a. Do not use cutting torches until work area is cleared of flammable materials.
   b. At concealed spaces, such as duct and pipe chases, verify condition and contents of hidden space before starting flame-cutting operations.
   c. Maintain fire watch and portable fire suppression devices during flame-cutting operations.
   d. Maintain adequate ventilation when using cutting torches.
6. Remove decayed, vermin-infested, or otherwise dangerous or unsuitable materials, and promptly and legally dispose of off Site.
7. Remove structural framing members and lower to ground by method suitable to avoid free fall and to prevent ground impact or dust generation.
8. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
9. Dispose of demolished items and materials promptly.
10. Return elements of construction and surfaces that are to remain to condition existing before selective demolition operations began.

C. Existing Facilities: Comply with Owner's requirements for using and protecting elevators, stairs, walkways, loading docks, building entries, and other building facilities during the selective demolition operations.

D. Removed and Salvaged Items:
1. Clean salvaged items.
2. Pack or crate items after cleaning and identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area on Site.
5. Protect items from damage during transport and storage.

E. Removed and Reinstalled Items:
1. Clean and repair items to functional condition adequate for intended reuse.
2. Paint equipment to match new equipment.
3. Pack or crate items after cleaning and repairing, and identify contents of containers.
4. Protect items from damage during transport and storage.
5. Reinstall items in locations indicated.
6. Comply with requirements for new materials and equipment.
7. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.

F. Existing Items to Remain:
1. Protect construction indicated to remain against damage and soiling during selective demolition.
2. When permitted by Engineer, items may be removed to a suitable, protected storage location, cleaned, and reinstalled in their original locations after selective demolition operations are complete.

3.6 DEMOLITION

A. Structures:
1. Cut, repair, reuse, excavate, demolish or otherwise remove parts of the existing structures or appurtenances, as indicated on the Drawings, herein specified and necessary to permit completion of the Work.
2. Dispose of demolished materials in an approved manner.
3. Include necessary cutting, bending, and welding of reinforcing steel, structural steel, or miscellaneous metal work found embedded in the existing structures.
4. When removing materials or portions of existing structures, shore up, underpin, and protect adjacent structures.
5. Concrete:
   a. Demolish in small sections.

b. Cut concrete to a depth of at least 3/4-inch at junctures with construction to remain, using a power driven saw.
c. Dislodge concrete from reinforcement to remain at perimeter of areas being demolished, cut reinforcement, and then remove remainder of concrete indicated.
d. Neatly trim openings to dimensions indicated.

6. Engineer's review of cutting: No existing structure, equipment or appurtenance shall be shifted, cut, removed or otherwise altered without obtaining review of Engineer.

B. Equipment:
1. Dismantle, remove, and relocate existing equipment, piping, and other appurtenances required for the completion of the Work.
2. Cut existing pipelines for the purpose of making connections thereto.
3. Cut off anchor bolts for equipment and structural steel indicated to be removed 1-inch below the concrete surface.
4. Patch remaining concrete surface to smooth even finish.
5. Remove air conditioning equipment without releasing refrigerants, if applicable.

C. Piping, Fire Protection, and Electrical Components:
1. When a new connection is made to an existing pipeline, install additional new piping, extending to and including the most convenient new valve.
2. Piping, conduit, and wiring indicated or required to be demolished shall be done so to the nearest reasonable connection outside of the Project area or as directed by Engineer.
3. Where necessary or required for the purpose of making connections, cut existing pipelines in a manner to provide an approved joint.
4. Weld beads, flanges, and provide Dresser couplings on existing and new piping.
5. Remove and reinstall existing fire protection heads to allow for new construction.
6. Comply with applicable fire protection codes.
7. Furnish new heads, piping, and connections as required for completion of the Work.
8. Remove junction boxes and electrical outlets which will no longer be in use.
9. At existing walls which are made thicker, extend piping and wiring to accommodate additional wall thickness.
10. Remove and reinstall fixtures and electrical outlets, switches, etc.

D. Ductwork:
1. Remove portions of existing ductwork systems to the nearest branch outside the project area, except as indicated otherwise on drawings.
2. Remove existing ductwork in a manner to minimize dispersion of dust in the duct system.
3. Repair and replace existing insulation and duct liner disturbed by this Work to provide a continuous smooth surface.

E. Masonry Walls:
1. Where masonry walls are to be removed and replaced, and where filling existing openings, allow for toothing in of the new masonry at alternate courses so that the existing running bond pattern is maintained.
2. Brick:
a. Existing brick which becomes exposed due to the removal of materials such as adjacent walls, windows, doors, cabinetry, equipment, etc., shall be thoroughly cleaned, scraped, brushed, and tuck pointed to match adjacent existing brick.
b. Blend appearance of exposed brick with the adjacent brick.
c. Replace damaged brick.

F. Floor Slabs:
1. Where new utilities must be installed below the existing floor slab, saw cut the slab for at least 1-inch of depth.
2. Break out the remaining depth with jack hammers or hand tools to provide a rough surface.
3. Leave existing steel reinforcing so that it laps at least 6 inches into the new concrete slab over the trench.
4. The exact width of the concrete removed shall depend upon the required depth and diameter of the new utility.
5. Allow for sufficient working space in the trench.

G. Conceal Utilities: Recess new piping, conduit, and other utilities into floors, wires, and ceilings in finished areas.

H. Ownership of Salvaged Materials:
1. Materials and equipment removed shall remain the property of Owner at Owner's option.
2. Items not salvageable, as determined by Engineer and Owner, and items Owner elects not to keep shall become the property of Contractor to be properly disposed of off the Site.
3. Salvaged equipment shall be thoroughly cleaned, lubricated, and greased for protection during prolonged storage.

I. Nonshrink Grout: Use nonshrink grout for setting wall castings, sleeves, leveling pump bases, doweling anchors into existing concrete and elsewhere as indicated.

J. Protect Facility from Water Damage: Provide flumes, hoses, piping, suitable plugs, bulkheads, or other means to divert or hold back the flow of wastewater, water, or other liquids, as required for proper performance of the Work.

K. Blasting: Not permitted.

L. Sleeves:
1. Subcontractors for mechanical, electrical, and other trades shall furnish sleeves and inserts for pipes, conduits, and similar items in forms, walls, partitions, and floors.
2. Perform work in cooperation with Contractor.
3. Place items in ample time so as not to delay operations.
4. Do not place sleeves so they pass through beams, girders, and similar construction.

M. Roofing: If existing roofing is to remain, obtain original roofing Manufacturer's approval and warranty on new roof penetrations and where removing existing roof penetrations and curbs.

N. Firestopping and Smokestopping: Install firestop and smokestop systems at utility penetrations in accordance with local building codes.

O. Earthwork:
1. In accordance with Division 31 Section “Excavation and Fill for Utilities”.

P. Miscellaneous: At existing walls which are made thicker, reinstall fire extinguisher cabinets, clocks, thermostats, and other wall hung items in new wall to accommodate additional wall thickness.

3.7 PATCHING AND REFINISHING

A. Promptly repair damage to adjacent construction caused by selective demolition operations.

B. Patching:
1. Patch and repair existing surfaces from which items have been removed leaving holes, fasteners, and surface blemishes exposed to view.
2. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
3. Completely fill holes and depressions in existing masonry walls that are to remain with an approved masonry patching material applied according to Manufacturer’s written recommendations.
4. Comply with Division 01 Section “Cutting and Patching.”

C. Refinishing:
1. Prepare existing surfaces for finishes by scraping, sanding, filling, acid etching, and sand blasting to ensure bonding and a smooth finish.
2. Refinish entire surfaces as necessary to provide an even finish.
3. Refinish continuous surfaces to the nearest intersection and entirely finish assemblies.
4. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.
5. Refinish entire surfaces if necessary to remediate existing lead painted surfaces.

D. Floors and Walls:
   1. Where floors or partitions that are demolished extend one finished area into another, patch and repair floor and wall surfaces in the new space.
   2. Provide an even surface of uniform finish, color, texture, and appearance.
   3. Remove existing floor and wall coverings and replace with new materials, if necessary, to achieve uniform color and appearance.
   4. Patch with durable seams that are as invisible as possible.
   5. Provide materials and comply with installation requirements specified in other Sections of these Specifications.
   6. Where patching occurs in a painted surface, apply primer and intermediate coats over the patch and apply final coat over entire unbroken surface containing patch.
   7. Provide additional coats until patch blends with adjacent surfaces.
   8. Where feasible, test and inspect patched areas after completion to demonstrate integrity of installation.

E. Ceilings: Patch, repair, or rehang existing materials as necessary to provide even plane surface of uniform appearance.

3.8 CLEANING

A. Clean materials installed under this Section in accordance with Division 01 Section “Cleaning and Waste Management.”

B. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations.

C. Return adjacent areas to conditions existing before selective demolition operations began.

END OF SECTION 02 41 19

SECTION 03 11 00 – CONCRETE FORMING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the design, installation, and removal of forms for cast-in-place concrete.

B. Division of Work:
   1. In accordance with the General Conditions, Contractor is responsible for dividing the Work among the Subcontractors and Suppliers and for delineating the work to be performed by specific trades. The following are suggestions as to how the Work may be divided. This is not a complete list of all the work:
      a. Mechanical, Electrical and Plumbing Trades: Supply, locate and install premanufactured items including inserts, sleeves, and other embedded items required by those respective trades.
      b. Formwork Subcontractor:
         1) Supply and install Site fabricated box-outs for chases, sleeves and other openings for mechanical, electrical and plumbing trades.
         2) Install other inserts, embedded parts, box-outs for openings, chases, reveals and recesses, except those specifically mentioned above that are by mechanical, electrical or plumbing trades. Special inserts, embedded parts or other special requirements needed by a specific trade shall be supplied by that trade to the formwork Subcontractor for installation.
      c. Contractor: Coordinate location of mechanical, electrical and plumbing inserts, embedded parts, openings and recesses with respective trades.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. ACI - American Concrete Institute:
      a. 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
      b. 301 - Standard Specifications for Structural Concrete for Buildings.
      c. 303R - Guide to Cast-In-Place Architectural Concrete Practice.
      d. 347R - Guide to Formwork for Concrete.

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

A. Form Construction:
   1. Provide required forms, shores, bracing, breast timbers, form ties, and accessories in sufficient quantities so as not to delay the Work, and of strength to support vertical and horizontal loads to which they are subjected.
   2. Deflection: Maximum deflection of forms shall be 1/240 of span or 1/4-inch, whichever is less.

1.5 QUALITY ASSURANCE

A. Design: The design and engineering of formwork, as well as its construction, shall be the responsibility of Contractor.

B. Notifications: Notify Engineer and special inspector at least 24 hours in advance of placing concrete.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Formwork Facing Materials:
   1. Smooth Form Finish Areas:
      a. Locations: All locations unless otherwise noted.
      b. The form facing material shall produce a smooth, hard, uniform surface on the concrete.
      c. Form facing materials may be plywood, tempered concrete-form-grade hardboard, metal, plastic, paper; or other approved material capable of producing the desired finish.
      d. Facing materials shall be supported by studs or other backing capable of preventing deflections in excess of those specified herein.
      e. Material with damaged surfaces, worn edges, patches, dents or other defects which will impair the texture of the concrete surface shall not be used.

B. Pan Forms:
   1. Steel or fiberglass, formed to profiles required to produce indicated shapes.
   2. Designed to be strong enough to carry construction live loads and the weight of plastic concrete without deflection detrimental to the structure.
   3. Formed for secure attachment to formwork platforms.
   4. Formed for removal in a manner which will not damage concrete.

C. Cylindrical Forms:
   1. Steel or fiberglass, formed to diameters required to produce indicated shapes.
   2. Strong enough to carry pressure of plastic concrete.
   3. Formed to produce shapes free from abrupt changes in shape, and to produce smooth uniform surface.
   4. Products made of spirally wound laminated paper, such as Sonotube, will be allowed for light pole bases and surfaces unexposed in the final installation.
      a. Form other surfaces exposed in the final installation with 2-piece forms.

D. Void Forms:
   1. Degradable paper or cardboard forms, to suit slab and beam applications.
   2. Strong enough to carry construction live load and the weight of plastic concrete without significant deformation.
   3. Configurations to suit application indicated on the Drawings, as chosen by Contractor.
   4. Sure Void Products, Inc.; or equal.

E. Chamfer Strips:
   1. Wood, metal, rubber, or PVC.
   2. Sizes as indicated, 3/4-inch x 3/4-inch minimum.

F. Rustication Strips:
   1. Wood, metal, rubber, or PVC.
   2. Formed for removal without damaging concrete.

G. Form Ties:
   1. At Smooth Form Finish Areas:
      a. Factory fabricated metal ties.
      b. Removable or snap type, with tapered cones as required to leave no tie portion within 1-inch of concrete surface plane.
      c. Designed to leave no larger than a 7/8-inch diameter hole at concrete surface.
      d. Chosen by Contractor to suit application and to resist pressure of fresh concrete.
      e. For liquid containing or resisting walls, such as tanks, trenches, basement walls and elevator pits, in addition to the above requirements, provide waterstop type feature on the tie.

H. Form Release Agent:
   1. Chemically neutral agent in hydrocarbon solvent that will effectively prevent absorption of moisture and prevent bond with the concrete.
   2. Non-staining and compatible with form liners and finish coats specified in Division 09 Section “Painting.”

PART 3 - EXECUTION

3.1 FORMWORK CONSTRUCTION

A. General:
1. Install wall form ties in a regular repetitive pattern.
2. Align and secure joints to avoid offsets.
3. Provide chamfered strips in exposed corners of concrete stair stringers, piers, columns, beams, spandrels, internal corners and for similar conditions throughout the Work.
4. Construct forms to allow for installation of waterstops, bentonite waterproof bead, and waterproofing termination.
5. Tie waterstops up to prevent folding when concrete is placed.
6. Provide top forms for inclined surfaces where slope is too steep to place concrete with bottom forms only.
7. The arrangement of facing material shall be orderly and symmetrical with the number of seams kept to the practical minimum.
8. Retighten forms after concrete placement if required to eliminate mortar leaks.
9. Inspection Ports and Cleanouts:
   a. Provide temporary openings where interior area of formwork is inaccessible for cleanout and inspection.
   b. Securely brace temporary openings and set tightly to forms to prevent loss of concrete mortar.
   c. Locate temporary openings on forms at inconspicuous locations.

B. Openings and Embedded Items:
1. Set and build into the work anchorage devices and other embedded items required for work that is attached to, or supported by, cast-in-place concrete.
2. Coordinate work of other Sections and cooperate with trade involved in forming and setting openings, slots, recesses, chases, sleeves, bolts, anchor and other inserts.
3. Use setting drawings, diagrams, instructions and directions provided by Suppliers of the respective items.
4. Do not perform work unless specifically indicated on Drawings or reviewed prior to installation.

C. Cleaning:
1. Clean forms as erection proceeds, to remove foreign matter.
2. Remove cuttings, shavings and debris from within forms.
3. Flush with water or use compressed air to remove remaining foreign matter.
4. Ensure that water and debris drain to exterior through clean-out ports.
5. When forms are extended for successive concrete placement, thoroughly clean surfaces, remove fins and laitance, and tighten forms to close joints.
6. Thoroughly clean embedded waterstops and concrete surfaces prior to constructing forms for the next pour.

D. Applying Form Release Agent:
1. Temperature of release agent and surfaces to which it is applied shall be a minimum of 70 degrees F.
2. Apply by spray only.
3. Uniformly coat surfaces with a thin film.
4. Wipe off excess with clean towels.
5. Apply in accordance with Manufacturer's recommendations.
6. Do not allow to stand in puddles in the forms and prevent bonding of concrete at construction joints.

E. Provisions for Form Removal:
1. Fabricate forms for easy removal without hammering or prying against the concrete surfaces.
2. Kerf wood inserts for forming keyways, reglets, recesses and the like to prevent swelling and for easy removal.

3.2 FORM AND SUPPORT REMOVAL

A. Forms and supports shall remain in place for not less than the following periods of time:
1. Building Foundations and Walls: 48 to 72 hours.
2. Sides of Beams and Girders: 36 to 48 hours.

3. Concrete Tanks: 168 hours (7 days).

	WHERE DESIGN LIVE LOAD IS: Less than Dead Load	Greater than Dead Load
4. Joist, Beam, or Girder Soffits:		
a. Under 10 Feet Clear Span Between Supports:	168 hours (7 days)	96 hours (4 days)
b. 10 to 20 Feet Clear Span Between Supports:	336 hours (14 days)	168 hours (7 days)
c. Over 20 Feet Clear Span Between Supports:	504 hours (21 days)	336 hours (14 days)
5. Elevated Slabs:		
a. Under 10 Feet Clear Span Between Supports:	96 hours (4 days)	72 hours (3 days)
b. 10 to 20 Feet Clear Span Between Supports:	168 hours (7 days)	96 hours (4 days)
c. Over 20 Feet Clear Span Between Supports:	240 hours (10 days)	168 hours (7 days)

d. Removal times are contingent on reshores, where required, being placed as soon as practicable after stripping operations are complete but not later than the end of the working day in which stripping occurs.

e. Where reshores are required to implement early stripping while minimizing sag or creep (rather than for distributing superimposed construction loads), capacity and spacing of such reshores should be as specified by Engineer.

B. In any event, do not remove forms and supports until concrete in walls has reached 30% of design strength, and in structural members and slabs has reached 75% of design strength.

C. Special precautions shall be taken when concrete is placed in average temperatures of 50 degrees F or below to ensure that forms are not removed before design strengths specified above are met.

D. If Contractor elects to use high-early-strength cement, the specified periods of time may be reduced as allowed by Engineer. This does not relieve Contractor of Contractor's liability.

E. Remove forms in such a manner and at such times as required to ensure safety of persons involved and so as to protect and maintain structural integrity of members.

F. Particular care shall be taken in removing forms to minimize damage to concrete surfaces; use crush or wrecking plates as necessary.

G. Whenever the formwork is removed, cure the exposed concrete as specified under Division 03 Section “Structural Concrete.”

3.3 FIELD QUALITY CONTROL

A. Inspect and check completed formwork, shoring and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties and parts are secure.

B. Form Surface Repairs:
1. Repair surfaces of forms to be reused in the work.
2. Split, frayed, delaminated or otherwise damaged form facing material will not be acceptable.
3. Apply new form release agent to new concrete contact form surfaces.
4. Do not use patched forms for exposed concrete surfaces.

C. Special Inspections:
1. Inform Engineer and special inspector when formwork is complete and has been cleaned, to allow for inspection.
2. Allow inspection of each section of plywood type of formwork prior to reuse.
3. Obtain inspections prior to placing concrete.

END OF SECTION 03 11 00

SECTION 03 15 00 – CONCRETE ACCESSORIES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the furnishing and installation of concrete accessories.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. ASTM Standard Specifications:
      a. D1751 - Preformed Expansion Joint Filler for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).
      b. E96 - Water Vapor Transmission of Materials.
      c. E1643 – Selection, Design, Installation and Inspection of Water Vapor Retarders Used in Contact with Earth or Granular Fill Under Concrete Slabs.
      d. E1745 - Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs.
   2. AASHTO M 153 – Preformed Sponge Rubber, Cork and Recycled Rubber Expansion Joint Fillers for Concrete Paving and Structural Construction.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Waterstops:
   1. W. R. Meadows, Inc., Elgin, Illinois; Vinylex Corporation, Knoxville, Tennessee; Greenstreak, St. Louis, Missouri; JP Specialties Inc; or equal.
   2. Multi-ribbed type with hollow center bulb, 4-inch, polyvinylchloride.
   3. Multi ribbed type specifically designed for large movements, 6-inch, polyvinylchloride.

B. Inserts for General Trades:
   1. Halfen Anchoring Systems; Heckman Building Products; Hohmann & Barnard, Inc.; or equal.
   2. Malleable iron and steel, strength as required.
   3. Include bolts, nuts, and washers.
   4. All steel shall be galvanized.

C. Premolded Expansion Strips:
   1. Asphalt Impregnated Fiberboard:
      a. W. R. Meadows, Inc.; J & P Petroleum Products, Inc.; Celotex Corporation; or equal.
      b. In accordance with ASTM D1751.
      c. Thicknesses: 1/4-inch, 3/8-inch, 1/2-inch, 3/4-inch or 1-inch as indicated on the Drawings.
      d. Strip widths to match slab thickness.
   2. Vinyl Expansion Strips:
      a. ProFlex by Oscoda Plastics, Inc.; or equal.
      b. Material: 100% recycles vinyl.
      c. Thickness: 1/4-inch; 1/2-inch
      d. Strip widths to match slab thickness.

D. Construction Joint Form for Building Floor Slabs On Grade:
   1. Superior Concrete Accessories, Inc.; Heckman Building Products Company; or equal.
   2. 16-gage, tongue and groove galvanized steel.

E. Control Joint Form for Building Floor Slabs On Grade:
   1. Heckman Building Products Company; Superior Concrete Accessories, Inc.; or equal.
   2. 20-gage galvanized steel.
   3. Depth: 1/4 of the slab thickness.

F. Waterproof Bead:
   1. Waterstop RX by CETCO; or equal.
   2. 3/4-inch x 3/8-inch.
   3. Provide at all joints marked WSJ on Drawings and at all other joints below high water level in tanks and walls.

G. Dowel Baskets:
   1. SureBuilt Concrete Forms & Accessories; or equal.
   2. Plate size: 3/4-inch x 2-1/2-inch x 12-inch; or as recommended by manufacturer satisfying requirements for HS-20 loading.
   3. Spacing: 24-in; or as recommended by manufacturer satisfying requirements for HS-20 loading.

H. Vapor Retarder:
   1. Griffolyn Type-65 by Reef Industries, Inc.; Stego Wrap Class C Vapor Retarder by Stego Industries, LLC; or equal.
   2. 10 mil Green by Reef Industries, Inc.; Stego Wrap Class A Vapor Retarder by Stego Industries, LLC; or equal.
   3. 15 mil Green by Reef Industries, Inc.; or equal.
   4. Vapor Barrier: Vaporguard by Reef Industries, Inc; Stego Wrap Vapor Barrier by Stego Industries, LLC; or equal.

I. Vapor Retarder/Barrier Accessories:
   1. Mastic Tape: Griffolyn Fab Tape; Stego Mastic; or equal.
   2. Repair Tape: Griffolyn Griff Tape; Stego Tape; or equal.
   3. Pipe Boots: Griffolyn Pipe Boots; or equal.

J. Other Materials: All other materials not specifically described but required for a complete and proper installation of concrete accessories shall be as selected by Contractor subject to the approval of Engineer.

PART 3 - EXECUTION

3.1 INSTALLATION

A. Install Concrete Accessories:
   1. As indicated on the Drawings.
   2. As specified in various other Sections.
   3. As necessary for the proper and complete performance of the Work.

B. Waterstops:
   1. Tie up to reinforcing steel with wire to prevent folding over during concrete placement.
   2. Weld, heat, or glue together at splices and joints in accordance with Manufacturer's recommendations.

C. Waterproof Bead:
   1. Install in joints at last convenient time of accessibility.
   2. Apply in strict accordance with Manufacturer's instructions.

D. Piping, Mechanical and Electrical Equipment Support: Refer to Division 03 Section “Concrete Forming.”

E. Vapor Retarder/Barrier:
   1. Install in accordance with Manufacturer’s instructions.
   2. Install vapor retarder/barrier on smooth compacted subgrade.
   3. Lap joints and seal with continuous mastic tape.
   4. Seal around penetrations with pipe boots and mastic tape.

5. Repair damage to vapor retarder/barrier with repair tape, and with additional matching vapor retarder/barrier if required.
6. Turn vapor retarder/barrier up and trim off flush with building floor slab where no expansion material is indicated.

END OF SECTION 03 15 00

SECTION 03 21 00 – REINFORCING STEEL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the furnishing and placement of concrete reinforcement.

1.3 REFERENCES:

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. ACI:
      a. 117 - Standard Specifications for Tolerances for Concrete Construction and Materials.
      b. 315 - Details and Detailing of Concrete Reinforcement.
      c. 315R - Guide to Presenting Reinforcing Steel Design Details.
      d. 318 - Building Code Requirements for Structural Concrete.
      e. 350 – Environmental Engineering Concrete Structures.
   2. ASTM:
      a. A36 - Carbon Structural Steel.
      b. A108 - Steel Bar, Carbon and Alloy, Cold-Finished.
      c. A185 - Steel Welded Wire Reinforcement, Plain, for Concrete.
      d. A615 - Deformed and Plain Billet-Steel Bars for Concrete Reinforcement.
      e. A641 - Zinc Coated (Galvanized) Carbon Steel Wire.
      f. A706 - Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement.
      g. A1064 - Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete.
   3. AWS:
      a. D1.4: Structural Welding Code - Reinforcing Steel.
   4. CRSI:
      a. Manual of Standard Practice.
      b. Reinforcing Bar Detailing.
      c. Placing Reinforcing Bars.

1.4 SUBMITTALS

A. Prepare Shop Drawings in accordance with ACI 315 and 315R and the CRSI Manual of Standard Practice and Reinforcing Bar Detailing. Include the following:
   1. Number, size, length, mark, and location of concrete reinforcement.
   2. Bending diagrams.

B. Certified Mill Test Reports:
   1. Submit upon request by Engineer.
   2. Showing physical and chemical analysis for each heat of reinforcement used on Project.

1.5 DELIVERY, STORAGE AND HANDLING

A. Deliver reinforcement free of loose rust, scale, paint, oil and structural defects, and store on the Site to maintain that condition.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:
   1. Concrete Reinforcement and Accessories:
      a. New, free from rust, scale, paint, oil, and structural defects.
      b. The same sizes as indicated on the Drawings.

B. Reinforcing Bars:
   1. ASTM A615 or A706.
   2. Yield Stress: F_y = 60,000 psi.
   3. Deformed unless otherwise noted; smooth where specifically indicated on the Drawings.
   4. Where Engineer has allowed reinforcing to be welded, comply with ASTM A706.

C. Welded Wire Fabric:
   1. ASTM A185 or A1064.
   2. ASTM A641.
   3. Yield Stress: F_y = 65,000 psi.
   4. Plain, cold drawn, electrically welded fabric.

D. Plate Dowels:
   1. Manufacturers:
      a. Diamond Dowels, by PNA Construction Technologies.
      b. Speed Plates, by Sika Greenstreak.
      c. Or equal.
   2. For use at construction joints.
   3. 3/4-inch plate saw cut from hot rolled steel plate meeting ASTM A36, or A108, Grade 1018.
   4. Pocket Former:
      a. High density plastic with interior collapsible fins and spacer that hold plate dowels in correct position.
      b. Creates a void to its vertical faces which allows for differential movement and prevents horizontal stress accumulation at joint.
   5. Shape and Size:
      a. Diamond or rectangular shaped.
      b. Sizes determined by Manufacturer to suit plate thickness.

E. Accessories:
   1. Chairs, bolsters, anchors, spacers, stirrups, ties, and other devices as required for spacing and fastening reinforcement in place.
      a. Conform to CRSI Manual of Standard Practice.
   2. At the exposed underside of concrete, use plastic-tipped chairs and bolsters.

2.2 FABRICATION

A. General:
   1. Fabricate reinforcement to the dimensions indicated on the Drawings and the reviewed Shop Drawings in accordance with the CRSI Manual of Standard Practice.
   2. Tolerances: As indicated in ACI 117.
   3. Bundle and tag reinforcement with suitable identification to permit checking, sorting and placing.
   4. Welding:
      a. Not permitted, unless specifically indicated on the Drawings.
      b. Only on ASTM A706 steel.
      c. When permitted, comply with AWS D1.4.
      d. No tack welding permitted.

B. Hooks:
   1. Bend hooks in accordance with ACI 318.
   2. Provide extension on 90-degree hook that meets the requirements of a standard hook unless indicated longer on the Drawings.
   3. Cold bend bars in such a way that will not damage the reinforcement.

C. Reinforcement with any of the following defects will not be permitted in the Work:
   1. Bar lengths, depths and bends exceeding specified fabrication tolerances.
   2. Bends or kinks not indicated on Drawings or reviewed Shop Drawings.
   3. Bars with reduced cross-section due to excessive rusting or other cause.

PART 3 - EXECUTION

3.1 PLACEMENT

A. Place concrete reinforcement in accordance with:
   1. Shop Drawings reviewed by Engineer.
   2. CRSI:
      a. Placing Reinforcing Bars.
      b. Manual of Standard Practice.
   3. Tolerances indicated in ACI 117.

B. Clearance:
   1. Parallel Bars:
      a. Preserve clear space between bars of not less than:
         1) For round bars, the normal diameter of the bar.
         2) 1-inch.
         3) 1-1/3 times the maximum size of aggregate.
   2. Bars in Upper Layers: Preserve a clear distance between layers of at least 1 inch.
   3. Longitudinal Bars in Columns, Pedestal and Boundary Elements in Walls:
      a. Preserve clear space between bars of not less than:
         1) For round bars, 1.5 times the normal diameter of the bar.
         2) 1.5-inches.
         3) 1-1/3 times the maximum size of aggregate.
   4. In the absence of specific cover requirements on the Drawings, provide the following minimum concrete cover for reinforcement:
      a. Cast Against and Permanently Exposed to Earth: 3 inches.
      b. Exposed to Earth, Liquid, Weather, or Bearing on Mud Mats:
         1) Slabs and Joists: 2 inches.
         2) Beams and Columns:
            a) Stirrups, Spirals and Ties: 2 inches.
            b) Primary Reinforcement: 2-1/2 inches.
         3) Walls: 2 inches.
         4) Footings and Base Slabs, Formed and Top Surfaces: 2 inches.
         5) Shells and Folded Plate Members: 1-1/2 inches.

C. Splices:
   1. Comply with ACI 318 and this Section.
   2. In the absence of specific lap requirements on the Drawings, lap in accordance with ACI 318, Class B.
   3. Stagger laps of circular ring tension steel:
      a. Stagger horizontally.
      b. Provide center to center spacing of at least the lap length, but no less than 3 feet.
      c. Ensure laps do not align over each other more frequently than every third bar.

D. Corner Bars:
   1. Provide corner bars for horizontal wall steel.
   2. In the absence of specific lap requirements on the Drawings, lap in accordance with ACI 318, Class B.

E. Field Cutting and Bending: Permitted only under special conditions reviewed by Engineer.

F. Field Welding:
   1. In accordance with AWS D1.4.
   2. Only when specifically indicated on the Drawings.
   3. Only on ASTM A706 steel.
   4. No tack welding permitted.

G. Welded Wire Fabric:
   1. Block up, lap and tie welded wire fabric reinforcement.
   2. Lap welded steel fabric 6 inches minimum at sides and ends.
   3. Install welded wire fabric 1-inch from top of slabs.

H. Slabs On Grade:
   1. Do not hook up welded wire fabric; either tie on supports at correct elevation or lay on partial slab thickness of fresh concrete just prior to placing remainder of slab.
   2. For chairs or bolsters resting on soil, place on either:
      a. Sand plates.
      b. Concrete bricks set flush with soil to provide bearing surface for chairs or bolsters.

I. Plate Dowels: Place at formed construction joints as indicated on the Drawings and as recommended by Manufacturer.

3.2 FIELD QUALITY CONTROL

A. Notification:
   1. Notify Engineer and special inspector when reinforcing is in place so reinforcement placement may be inspected.
   2. Provide a minimum of 24 hours' notice prior to placement of concrete.

END OF SECTION 03 21 00

SECTION 03 31 00 – STRUCTURAL CONCRETE

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the design, furnishing and placement of cast-in-place concrete.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. ACI – American Concrete Institute:
      a. 117 - Specification for Tolerances for Concrete Construction and Materials.
      b. 211.1 - Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
      c. 221.1R - Report on Alkali-Aggregate Reactivity.
      d. 301 - Specifications for Structural Concrete.
      e. 302.1R - Guide to Concrete Floor and Slab Construction.
      f. 304R - Guide for Measuring, Mixing, Transporting and Placing Concrete.
      g. 304.2R - Placing Concrete by Pumping Methods.
      h. 305R - Guide to Hot Weather Concreting.
      i. 306R - Guide to Cold Weather Concreting.
      j. 309R - Guide for Consolidation of Concrete.
      k. 318 - Building Code Requirements for Structural Concrete.
      l. 350 - Code Requirements for Environmental Engineering Concrete Structures.
      m. 350.1 - Specification for Tightness Testing of Environmental Engineering Concrete Containment Structures.
      n. 350.3 - Seismic Design of Liquid-Containing Concrete Structures.
      o. 503.2 - Specification for Bonding Plastic Concrete to Hardened Concrete with a Multi-Component Epoxy Adhesive.
   2. ASTM Publications:
      a. A820 - Specification for Steel Fibers for Fiber Reinforced Concrete.
      b. C33 - Specification for Concrete Aggregates.
      c. C39 - Test Method for Compressive Strength of Cylindrical Concrete Specimens.
      d. C94 - Specification for Ready-Mixed Concrete.
      e. C136 – Test Method for Sieve Analysis of Fine and Coarse Aggregates.
      f. C150 - Specification for Portland Cement.
      g. C157 - Test Method for Length Change of Hardened Hydraulic-Cement Mortar and Concrete.
      h. C227 - Standard Test Method for Potential Alkali Reactivity of Cement-Aggregate Combinations (Mortar-Bar Method).
      i. C260 - Specification for Air-Entraining Admixtures for Concrete.
      j. C295 - Guide for Petrographic Examination of Aggregates for Concrete.
      k. C309 - Specification for Liquid Membrane-Forming Compounds for Curing Concrete.
      l. C494 - Specification for Chemical Admixtures for Concrete.
      m. C595 – Blended Hydraulic Cements.
      n. C618 - Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete.
      o. C939 - Test Method for Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method).
      p. C989 - Specification for Slag Cement for Use in Concrete and Mortars.
      q. C1105 - Test Method for Length Change of Concrete Due to Alkali-Carbonate Rock Reaction.
      r. C1107 - Specification for Packaged Dry, Hydraulic Cement Grout (Nonshrink).
      s. C1567 – Test Method for Determining the Potential Alkali-Silica Reactivity of Combinations of Cementitious Materials and Aggregates (Accelerated Mortar Bar Method).
   3. International Concrete Repair Institute (ICRI).
   4. MDOT - Standard Specifications for Construction.

1.4 DEFINITIONS

A. Abbreviations:
1. ASR: Alkali silica reactivity; alkali silica reaction.
2. W/cm: Water to cementitious ratio.

B. Terms:
1. Mass Concrete: Concrete with a thickness of 4′-0″ or greater.

1.5 SUBMITTALS

A. Manufacturer's Literature:
1. Concrete Mix Designs:
a. Refer to Part 2 of this Section to determine if mix designs shall be determined using trial mixtures or may be determined based on the concrete supplier's past performance test records.
1) Allow for submittal and review of proposed trial mixtures and performing and submitting 28-day testing and subsequent review of trial mixtures, where required, in the Project's schedule.
b. For Mix Designs Based on Trial Mixtures:
1) Refer to procedures in Part 2 of this Section.
2) For each mix design for which trial mix design procedures is specified, prepare the following 2 separate submittals.
3) First Trial Mix Submittal:
a) Submit mix design constituents for each trial mixture, to include:
(1) Dry weights of cementitious materials.
(2) Saturated surface-dried weights of fine and coarse aggregates.
(3) Names, types and quantities of mix components.
(4) Weight of water.
(5) Type of mixing to be used as indicated in Item 11 of ASTM C94.
(6) Predicted compressive strength, slump and air content.
b) Submit to Engineer and obtain review prior to batching trial mixtures.
4) Second Trial Mix Submittal:
a) Submit test data for each trial mixture after 28-day testing is complete, to include:
(1) Concrete compressive, slump and air content test results.
(2) Concrete shrinkage test results.
b) Submit trial mixture graph.
c) Submit Project Mix Designs:
(1) Submit Project mix designs based on the cementitious content selected by mix designer from each trial mixture graph, that is associated with the required target average compressive strength (f'_{cr}).
(2) Include for each Project mix design:
(a) Dry weights of cementitious materials.
(b) Saturated surface-dried weights of fine and coarse aggregates.
(c) Names, types and quantities of mix components.
(d) Weight of water.
(e) Type of mixing to be used as indicated in Item 11 of ASTM C94.
(f) Predicted compressive strength, slump and air content.
d) Submit to Engineer and obtain review prior to placing concrete.
2. Product Data:
a. Submit for each component of each mix design.
b. Curing Agents:
1) Submit for each type of curing agent.
2) Include application rate required for each type of curing agent.
3. ASR:
a. If aggregate to be used in the Project's concrete mixes has ASR potential submit results of tests performed in accordance with ASTM C1567 or comparable ASTM test of concrete mixes using the same materials and sources as intended for use on this Project, demonstrating the elimination of ASR.

b. Mortar bars constructed of cementitious materials and coarse and fine aggregates shall produce an expansion of less than 0.10% at 14 days in an accelerated test.
c. Submittal may utilize testing within previous 2 years if materials and sources tested are the same as intended for use on this Project.

1.6 QUALITY ASSURANCE

A. Mix Designer Qualifications:
1. Trained and experienced in the development of concrete mix designs.
2. Knowledgeable of the design and the mix design procedures specified herein.

B. Batching and Placement Personnel Qualifications:
1. Trained and experienced in the batching of concrete, and placement of concrete.
2. Knowledgeable of the design and the reviewed Submittals.

C. Special Inspections of Concrete:
1. In accordance with Division 01 Section “Special Inspections and Tests.”
2. Test Reports: Submit reports of tests of production concrete, to include:
a. Concrete compression.
b. Alkali silica reactivity (ASR) potential of fine and coarse aggregates.
c. Yield, air content and slump tests.
d. Water content.

D. ASR Potential:
1. Determine in accordance with Appendix X1 of ASTM C33, ACI 221.1R and the tests stated therein.
2. If local aggregates exhibit unacceptable potential ASR and will harm the finished concrete, either:
a. Import nonreactive aggregates, or
b. Provide a mix design modified by pozzolans or admixtures, or both, that eliminates the potential for ASR.
3. Submit results of tests as specified herein.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cementitious Products:
1. Cement:
a. Portland cement, ASTM C150, Type I.
b. Cements complying with ASTM C595, Type 1L or Type 1L(10) are permitted as a substitution for ASTM C150, Type 1 cement, provided that concrete mixes are proportioned using trial mix procedures as specified herein.
c. Do not use different types of cement, different Manufacturers of cement, or different degrees of fineness on the Project.
2. High Early Cement: Portland cement, ASTM C150, Type III, only with Engineer’s approval.
3. Fly Ash: ASTM C618, Class C or F.
4. Ground-Granulated Blast Furnace (GGBF) Slag: ASTM C989, Grade 100 or 120.

B. Aggregates:
1. Grade aggregates according to procedures of ASTM C136.
2. Aggregates: Inert, non-chemically reactive, and non-radioactive.
3. Coarse Aggregates:
a. Normal Weight Concrete:
1) ASTM C33-5S, Number 67 (3/4-inch) or MDOT 17A, crushed limestone.
2) ASTM C33-5S, Number 8 for concrete mixes in the Proportioning Schedule requiring 3/8-inch maximum coarse aggregate.
4. Fine Aggregate: ASTM C33 or MDOT 2NS.
5. Test aggregates for alkali-silica reactivity and provide mitigation method, if required, as specified herein.

C. Water: Clean, fresh, and potable.

D. Admixtures:
   1. General:
      a. No admixture shall contain more than 0.1% water soluble chloride ions by mass of cementitious material.
      b. No admixture shall contain calcium chloride.
   2. Air-Entraining: ASTM C260.
   3. Mid-Range Water Reducer (MRWR): ASTM C494, Type A.
   4. Water Reducing and Retarding (WR&R): ASTM C494, Type D.
   5. Water Reducing and Accelerating (WR&A): ASTM C494, Type E.
   6. High Range Water Reducing (HRWR): ASTM C494, Type F.
   7. Micro Silica: Force 10,000-D by W.R. Grace & Company; Rheomec SF 100 by BASF Admixtures, Inc.
   8. Crystalline Waterproofing Additive:
      a. Acceptable Manufacturers:
         1) Xypex Chemical Corporation.
         2) Or reviewed equal.
      b. Products:
         1) Obtain Manufacturer's recommendation for the appropriate one of the following products to use under the conditions anticipated at time of placement:
         2) Xypex Admix C-500.
         3) Xypex Admix C-1000.
         4) Xypex Admix C-2000.
      c. Source Quality: Obtain proprietary crystalline waterproofing products from a single Manufacturer.

E. Curing Agents:
   1. Comply with ASTM C309.
   2. Provide products which are compatible with floor coatings or toppings specified.
   3. Manufacturer shall guarantee that Manufacturer's material is compatible with the intended application.
   4. No wax-based compounds allowed.
   5. No acrylics allowed where toppings or coatings are to be applied.
   6. Curing Compound:
      a. Water based, dissipating.
      b. Type 1 - Clear or translucent without dye.

F. Moist Curing Blankets:
   1. Hydrasorb by Fortifiber Building Systems Group; or equal.
   2. Polypropylene coated moisture retentive blankets.
   3. Required for curing of all water retaining structures.

2.2 MIXES

A. Delegated Design:
   1. The proportioning of concrete mix designs is a delegated design.
   2. The concrete Supplier shall be responsible for selection of the mix proportions in accordance with Option C as defined in ASTM C94 with the minimums as specified herein.
   3. Provide proportions of materials for concrete in accordance with ACI 211.1, in order to produce concrete with the specified compressive strength, minimal shrinkage, good placability and durability, and other specified properties.

B. Trial Mixture Proportioning:
   1. For mix design 1.
   2. Cementitious Content:
      a. Bid using the quantity of sacks of cementitious material per cubic yard of concrete necessary to meet the requirements of this Specification. However, base the bid on an absolute minimum of 5.5 sacks per cubic yard of concrete.
      b. Provide additional cementitious material, if required, to meet other requirements of this Specification.
   3. Meet the requirements of the mix design criteria as noted in the Proportioning Schedule at the end of this Section.

4. Trial Mixture Proportioning Procedures:
   a. The goal of these procedures is to develop mix designs with an equal emphasis on the following performance requirements:
      1) Minimizing shrinkage, and
      2) Achieving the required compressive strength.
   b. The mix designer shall select and document concrete proportions in accordance with ACI 318 and as specified following.
   c. For each mix design requiring trial mixture proportioning, prepare and submit to Engineer a minimum of 3 trial mixtures.
      1) The mix designer shall select a different cementitious content for each trial mixture that will thereby result in a range of compressive strengths encompassing (falling above AND below) the required target average compressive strength (f'_{cr}).
         a) Note that the w/cm ratio of each trial mixture shall remain as constant as practical, as specified.
         b) For purposes of obtaining the necessary range of compressive strengths for the trial mixtures, the minimum cementitious content specified above is waived.
         c) Only for trial mixture proportioning, design trial mixtures to produce a slump within 60.75-inch of the maximum specified slump both prior to and after adding the water reducer, and for air-entrained concrete, within 60.5% of the maximum specified air content.
      2) The required target average compressive strength (f'_{cr}) shall be 5,200 psi as follows:

Mix Design Specified Compressive Strength, f'_c (psi)	Required Target Average Compressive Strength, f'_{cr} (psi)
Less than 3,000	f'_c + 1,000
3,000 to 5,000	f'_c + 1,200
Over 5,000	1.10 f'_c + 700

   d. Select and submit the proposed proportions for each of the trial mixtures to Engineer as specified for “First Trial Mix Submittal” in Part 1 of this Section.
   e. After Engineer’s review of the proposed trial mixtures, for each mix design requiring trial mix proportioning prepare mixes of the reviewed trial mixtures, in quantities of 2 cubic yards each, minimum, and deliver each to the Project Site, to simulate real mixing and delivery conditions and to be tested.
      1) Trial mixtures shall utilize only those products reviewed by Engineer; Engineer may reject trial mixes that include products that have not been reviewed by Engineer.
   f. Coordinate with the Owner’s special inspector to perform slump, unit weight, temperature and air content testing and make cylinder and drying shrinkage test samples from the trial mixtures delivered to the Project Site, in accordance with Division 01 Section “Special Inspections and Tests” and as follows.
      1) Cylinder Testing:
         a) Make a minimum of 6 cylinders from each trial mixture and cure in accordance with ASTM C31 or C192, as applicable. Test the cylinders in accordance with ASTM C39 at the times as follows:
            (1) 1 at 3 days.
            (2) 1 at 7 days.
            (3) 1 at 14 days.
            (4) 2 at 28 days.
            (5) 1 spare.
      2) Drying Shrinkage Testing:
         a) Conduct a drying shrinkage test on the trial mixture with the maximum cementitious materials content of the trial mixtures each trial mixture.
         b) Prepare 3 specimens for each drying shrinkage test.

c) Drying shrinkage specimens shall be 4-inch x 4-inch x 11-inch prisms with an effective gage length of 10 inches, fabricated, cured, dried and measured in accordance with ASTM C157 except with the following modifications:
   (1) Remove specimens from the molds at an age of 23 hours ±1 hour after batching, place immediately in water at 73 degrees F ±3 degrees F for at least 30 minutes, measure within 30 minutes thereafter to determine original length and then submerge in lime saturated water as specified in ASTM C157 for 7 days.
   (2) At age 7 days, remove specimens from the lime saturated water and take measurement to determine length; the length at 7 days shall be the base length of drying shrinkage calculations (0 days drying age).
   (3) Immediately store specimens in a room maintained at 73 degrees F ±3 degrees F and 50% ±4% relative humidity for the remainder of the test.
   (4) Compute drying shrinkage deformation for each specimen as the difference between the base length (at 0 days drying age) and the length after drying at each test age expressed as percentage of base length, reported to the nearest 0.001%.
   (5) Report measurements to determine shrinkage separately for 7, 14, and 21 days ±4 hours drying time after the 7 days of moist curing.
   (6) If drying shrinkage of any specimen deviates from the average for that test age by more than 0.004%, disregard the results for that specimen.
   (7) Acceptance Criteria:
      (a) The average drying shrinkage of each set of test specimens from a trial mixture as measured at the 21 days drying age shall not exceed 0.036% for concrete to be used in liquid containing structures.
      (b) Trial mixtures exhibiting shrinkage greater than these limits will be disallowed, and may be reason, at Engineer's sole discretion, to require new trial mixture testing.

g. From the cylinder tests of the trial mixtures that have met the shrinkage test acceptance criteria, the mix designer shall develop a graph for each mix design requiring trial mix proportioning showing the relationship between cementitious contents and compressive strengths of the trial mixtures at the 28-day test age.

h. From each graph, the mix designer shall develop a Project mix design that will achieve the required target average compressive strength (f'_{cr}) and meet the slump and air content requirements specified in the Proportioning Table at the end of this Section.
   1) Project mix designs shall include only those products that were included in the trial mixes tested.

i. Submit "Second Trial Mix Submittal" as indicated in Part 1 of this Section for Engineer's review.
   1) Place no concrete requiring trial mix proportioning until the "Second Trial Mix Submittal" has been reviewed by Engineer.

C. Proportioning Schedule: Refer to the Proportioning Schedule at the end of this Section for specific proportioning requirements.

D. Climatic Conditions:
   1. Adjust concrete mix design for climatic conditions.
   2. Reduce entrained air to 3-1/2% for architectural concrete placed during cold weather conditions.

2.3 SOURCE QUALITY CONTROL

A. Production and Delivery:
   1. Batch, mix and transport ready mixed concrete in accordance with ASTM C94.
   2. Concrete Delivery Tickets:
      a. Before unloading each batch of concrete at the Site, furnish a delivery ticket on which is printed, stamped or written the following information:
         1) Name of concrete batch plant.
         2) Serial number of ticket.
         3) Date and truck number.
         4) Name of Contractor.
         5) Job name and location.

6) Specific class or designation of concrete.
7) Amount of concrete (cubic yards).
8) Time loaded or of first mixing of cement and aggregates.
9) Type, name and amount of admixture.
10) Type, brand and amount of cement.
11) Total water content by producer (or water-cement ratio).
12) Maximum size of aggregate.
13) Weights of fine and coarse aggregates.
14) Absorption of fine and coarse aggregates.

3. Concrete delivered when the outdoor temperature is lower than 40 degrees F shall arrive at the Site having a temperature of not less than 60 degrees F and not greater than 90 degrees F unless otherwise specified or permitted by the Engineer.
4. Complete discharge of the concrete within 1-1/2 hours after introduction of mixing water to the cement or 1 hour after arriving at the Site, whichever is sooner, unless otherwise specifically approved by the Engineer.

PART 3 - EXECUTION

3.1 PLACEMENT

A. General: Place concrete in accordance with ACI 304R and ACI 304.2R.

B. Preplacement Inspection:
1. Before placing concrete, inspect and complete the formwork installation, reinforcing steel and items to be embedded or cast-in.
2. Notify other trades to permit the installation of their work; cooperate with other trades in setting such work, as required.
3. Ensure that forms have form release agents evenly applied in accordance with Manufacturer's recommendations.
4. Notify Engineer and special inspector at least 24 hours in advance of placing.

C. Handling:
1. Handle concrete from mixer to place of final deposit in carts, buggies, conveyors, pumps, or crane buckets.
2. Do not deliver concrete by methods with a free fall of more than 3 feet.
3. Crane buckets shall have a reinforced rubber chute which shall extend into formwork to minimize free fall of concrete and to eliminate separation of materials.
4. Take every possible precaution to prevent separation or loss of ingredients while transporting concrete.
5. Do not place concrete into standing water (unless approved tremie procedures are followed), and do not displace standing water with fresh concrete.

D. Method and Rate:
1. Deposit concrete in horizontal layers in walls to avoid flowing along the forms.
2. Horizontal layers shall not exceed 18 inches in thickness. Place in a manner to avoid inclined construction joints.
3. Carry on placement at such a rate that concrete surfaces not yet to grade shall not have reached their initial set before additional concrete is placed.

E. Compaction:
1. Mechanically vibrate concrete to thoroughly embed reinforcement and fixtures.
2. Apply mechanical vibration directly to concrete.
3. Apply vibration at point of deposit and in area of freshly placed concrete.
4. Vibrations shall be of sufficient duration to accomplish thorough compaction and complete embedment of reinforcement and fixtures but shall not be so long as to cause segregation of mix.
5. Vibration shall ensure complete intermixing of concrete placed in different layers.
6. Withdraw vibrator at the rate of 1-1/2 inches per second.
7. Use vibrators designed to operate with vibratory element submerged in concrete, maintaining a speed of not less than 6,000 impulses per minute.
8. Comply with ACI 309R.
9. Do not use vibrators to transport concrete inside of forms.

10. Insert and withdraw vibrators vertically at uniformly spaced locations not farther than the visible effectiveness of the machine.
11. Avoid inserting vibrators into lower layers of concrete that have begun to set by scheduling placement of concrete layers and concrete delivery.

F. Retempering:
1. Do not add water to the concrete once it has left the concrete Supplier's plant.
2. Concrete which has stood for 60 minutes is unacceptable; immediately remove from the premises, unless the use of the concrete is specifically approved by the Engineer.

G. Site Redosing with Water Reducer:
1. 1 redosing of batched concrete at the Site may be permitted only under the following conditions:
   a. Redosing has been approved in advance by Engineer and water reducer Manufacturer.
   b. Equipment is on-Site to permit accurate measurable dispensing.
   c. Adequate supply of water reducer is on-Site.
   d. Engineer or special inspector witnesses the addition of water reducer, verifies the quantity, and witnesses the proper truck mixing of the redosed concrete.

H. Cold Weather Concrete Operations:
1. Comply with the recommendations of ACI 306R.
2. Recommended Protective Measures:
   a. Heating materials.
   b. Providing insulating blankets and windbreaks.
   c. Heated enclosures.
3. Advise Engineer of planned protective measures.
4. Straw or similar materials shall not be allowed.
5. Do not use frozen materials or materials containing ice or snow.
6. Do not place concrete on frozen subgrade.

I. Hot Weather Concrete Operations:
1. Comply with the recommendations of ACI 305R.
2. Recommended Protective Measures:
   a. Cooling materials.
   b. Concrete placement during cooler hours of the day.
   c. Providing shading and windbreaks.
3. Advise Engineer of planned protective measures.

3.2 SURFACE TREATMENT

A. Formed Surface Finishes:
1. Refer to Division 03 Section "Concrete Forming" for formwork facing materials and required finishes.
2. Surface Treatment Definitions:
   a. As-Cast Finish: Finish achieved by using form-facing materials as indicated for as-cast finish in Division 03 Section "Concrete Forming".
   b. Rough Form Finish:
      1) Patch tie holes, defects and bug holes greater than 1/2-inch diameter.
      2) Chip or rub off fins exceeding 1/2-inch in height.
      3) Leave surfaces with the texture imparted by the forms.
   c. Smooth Form Finish:
      1) Patch tie holes, defects and bug holes greater than 1/2-inch diameter.
      2) Remove fins exceeding 1/8-inch in height.
   d. Smooth Form (Potable Water) Finish:
      1) As defined above for As Cast and Smooth Form Finishes, except patch all bug holes regardless of size.
   e. Rubbed Finishes: Where indicated, provide rubbed finish as specified following after preparing surfaces to comply with an as-cast, smooth form finish.
      1) Smooth Rubbed Finish:
         a) Remove forms as early as permitted and perform necessary patching.

b) Produce finish on hardened concrete no later than the day following formwork removal, by wetting the surface and rubbing it with carborundum brick or other abrasive until uniform color and texture are produced.
c) Use no cement grout other than cement paste drawn from the concrete itself by the rubbing process.
d) Cure as specified.

2) Grout-Cleaned Rubbed Finish:
a) Begin cleaning operations after contiguous surfaces to be cleaned are completed and accessible.
b) Do not clean surfaces as work progresses.
c) Wet the surface and apply grout consisting of one-part Portland cement and one and one-half parts fine sand with enough water to produce the consistency of thick paint. Match color of surrounding concrete.
d) Scrub grout into voids and remove excess grout.
e) When grout whitens, rub the surface and keep the surface damp for 36 hours afterward.

3. Unless noted otherwise formed concrete surfaces shall have an As-Cast, Smooth Form finish.

B. Patching:
1. General:
a. Patch tie holes and defective concrete areas. Patch bug holes as specified for the required finish.
b. Patches shall be acceptable to Engineer and reasonably match the adjacent concrete construction or the defective concrete shall be replaced.
c. Patches in liquid containing structures shall be liquid tight.
2. Patch Materials:
a. Mortar with proportions and admixtures as close to the proportions of the concrete to be patched as possible.
1) For exposed surfaces, mix different proportions of gray and white cement until exact color of surrounding concrete is obtained.
2) Reduce coarse aggregate size to pea stone for patches under 1-1/2 inches thick.
3) Omit coarse aggregate for patches under 1/2-inch thick.
4) Mix mortar using water and epoxy bonding agent in 50:50 ratio.
5) Do not exceed the w/cm ratio specified for the surrounding concrete.
a) Utilize water reducer, not water, if a greater slump than provided by the allowed water content is required to develop the workability required for the patch location.
3. Preparation:
a. Sound concrete with a hammer or chains to determine limits of defective concrete.
b. Mark limits of patch with chalk or paint.
c. Limits of patch shall be straight and patch areas square or rectangular-shaped. Avoid acute angles.
d. Saw cut marked limits perpendicular to member face to a depth of 1/2-inch to 5/8-inch into concrete, measured from concrete surface.
1) Diamond blade saw or grinder with abrasive disk suitable for cutting concrete are acceptable for cutting marked limits.
2) Exercise caution during saw cutting to avoid damaging reinforcement and other embedded items.
e. Remove concrete from within marked limits to minimum depth of 3/4-inch using 15 pound maximum electric or pneumatic chipping hammers or hand tools, leaving a rough surface meeting CSP-7 as defined by ICRI.
f. If the removal of defective concrete exposes reinforcement continue removal to provide a minimum of 3/4-inch clearance on all sides of (including behind) reinforcement, but deeper if necessary to reach sound concrete.
g. After removals are complete, but prior to final cleaning, inspect cavity and exposed reinforcement. Notify Engineer for inspection; inspection will be at Engineer's option.
h. Clean and air blast limits of removal to remove grit and deleterious material.
i. Pre-dampen cavity surface with clean water. Concrete surfaces shall be saturated surface dry (SSD) with no free water at time of patch placement.
j. Immediately prior to placing patch material, scrub neat cement mix into the surface of the patch area.

4. Patch Method:
   a. Use form and fill method or trowel fill method as determined by Contractor for patch location and conditions.
   b. Form and Fill:
      1) Forms and Form Release Agent: In accordance with Division 03 Section "Concrete Forming."
      2) Vibrate patch material to consolidate concrete, encapsulate embedded items, fill to patch limits and eliminate air pockets. Do not over vibrate.
      3) Leave forms in place for a minimum of 3 days.
      4) Immediately after removing forms, either wet cure or apply a minimum of 2 coats of curing compound in accordance with Manufacturer's recommendations.
   c. Trowel Fill:
      1) Work patch material thoroughly into prepared area, around embedded items, fully filling to the limits of the patch area and eliminating air pockets.
      2) Screed and trowel surface of patch to match the profile of the surrounding concrete.
      3) Immediately after finishing surface, either wet cure or apply at least 2 coats of curing compound in accordance with Manufacturer's recommendations.
5. Protect freshly applied concrete from premature drying and maintain with minimal moisture loss at a relatively constant temperature for a minimum of 7 days.

C. Finishing Floors:
1. Unless noted otherwise provide the following on floors and slabs:
   a. Provide monolithic troweled finish.
   b. Vibratory screeding is required on concrete slabs.
   c. Suggested Finishing Procedure:
      1) Use highway straight edge to eliminate high and low spots.
      2) After screeding and as soon as concrete has set sufficiently, float surface with compactor power floats.
      3) Steel trowel surface.
   d. Burnish slabs to smooth, hard, dense finish free from trowel marks, blemishes and irregularities.
   e. At slab areas which receive a topping or grout base and tile, only power floating is required.
2. If no indication is given, comply with 1999 ACI 302.1R, Table 2.1.

D. Floor Finish Tolerances:
1. In accordance with ACI 117 and 302.1R.
2. Interior building floors shall have a maximum sag of 1/8-inch under a 10-foot straight edge.
3. No "bird bath" allowed on sloping floor slabs.

E. Curing Agents:
1. General:
   a. Apply in strict accordance with Manufacturer's instructions.
   b. Coordinate curing compound chemical compatibility with coating subcontractor or finish surface subcontractor. Make adjustments at no additional cost to the Owner with the approval of the Engineer if necessary to ensure compatibility.
2. Curing Compound:
   a. Apply immediately to slab areas requiring curing compound and immediately to walls after forms are removed.
   b. Roll or spray compound in accordance with Manufacturer's instructions. Apply each application at the rate in gallons per square foot and number of coats required to meet ASTM C309.

3.3 PROTECTION

A. Keep freshly placed concrete from damage due to low temperatures when the mean daily temperature is below 40 degrees F (4.5 degrees C) in accordance with ACI 306R.

3.4 JOINTS AND EMBEDDED ITEMS

A. Comply with ACI 318 and ACI 301.

B. Wall Joints:
   1. Avoid horizontal construction joints in walls below grade and in 1-story walls above grade.
   2. Locate control joints in building grade walls directly below control joints in masonry walls, except where otherwise indicated on Drawings.

C. Slab Joints:
   1. Soil bearing slabs shall have construction or control joints as indicated on the Drawings. Where no specific indication is given, limit joints to 20 feet spacing.
   2. Elevated slabs shall have only construction joints as indicated on the Drawings. Where no indication is given, limit joints to a maximum 20 feet on center. However, joint locations shall be reviewed by Engineer prior to placing concrete.
   3. Coordinate construction joints (and control joints as allowed herein) with Architectural Drawings and finishes.

D. Construction Joints:
   1. Construct a keyway at construction joints in concrete.
   2. In reinforced concrete, provide lap of reinforcing steel at construction joints, except where specifically indicated otherwise.

E. Embedments:
   1. Contractor shall be responsible for controlling the proper placing of embedded pipe, conduit and other fixtures.
   2. Comply with ACI 318 requirements.
      a. Embedments shall not impair or reduce the strength of the structure.
      b. Embed aluminum in concrete only when absolutely necessary; coat aluminum to be in concrete with a coating sufficient to prevent electrolytic reaction between aluminum and concrete.
   3. Anchor rods shall be clean and free of oil, grease and dirt prior to installation.
   4. Lay out locations of electrical and mechanical components prior to actual placement and obtain approval from Engineer before placing concrete.
   5. Pipes and Conduits:
      a. Shall not displace reinforcing from its design locations.
      b. Shall not displace more than 4% of the concrete area on which strength is calculated or which is required for fire resistance.
      c. Outside diameter shall not be larger than 1/3 the overall thickness of the slab, wall or beam in which it is embedded.
      d. Shall not be spaced closer than 3 diameters apart.
      e. In structures with 2 layers of reinforcement, shall be placed between the layers.
      f. Maintain minimum concrete cover of 3/4-inches. Increase cover to 1-1/2 inches for concrete exposed to fluids or weather.
      g. Place additional reinforcing with an area greater than or equal to 0.002 times the area of the concrete section perpendicular to the piping or conduit.

F. Liquid Containing Structures:
   1. Liquid containing structures have been designed taking into account joint location and amount of corresponding reinforcing steel required. Do not alter joint locations without Engineer's approval.
   2. Where no specific indication is given, limit joints to 30 feet spacing.

3.5 SPECIFIC ITEMS OF CONSTRUCTION

A. Footings:
   1. Provide required footings and equipment foundations for mechanical, electrical and architectural trades.
   2. Adjustments will be made in Contract price if deeper footings are required in accordance with prior approval of Engineer.

B. Concrete Walls in Building:
   1. Construct control and construction joints as indicated on Drawings. Unless otherwise noted, locate joints directly below those in masonry, but with a maximum spacing of 20′-0″ on center.
   2. Treat surfaces of concrete as specified after removing forms.
   3. Apply curing agent to walls after removing forms.
   4. Refer to Article 3.2 – Surface Treatment for concrete wall finish.

C. Liquid Containing or Retaining Concrete Structures:
   1. Install PVC waterstops and waterproof bead in joints below maximum water level and otherwise indicated. Tie PVC waterstop up to prevent folding over.
   2. Treat surfaces of concrete as specified after removing forms.
   3. Apply curing agent to slabs and walls after removing forms.

D. Concrete Slabs on Ground:
   1. Structural Fill: Ensure fill and granular fill layer have been installed and compacted according to Division 31 Section “Excavation and Fill for Structures.”
   2. Only where indicated on the Drawings, at intersections of building floor slabs and vertical surfaces and around columns, install premolded expansion strips.
   3. Install welded wire fabric indicated on the Drawings.
   4. Vapor Retarders/Barriers: Where indicated below slabs, install in accordance with Division 03 Section “Concrete Accessories.”

E. Beam and Slab Construction:
   1. Build beams and slab construction as indicated on the Drawings.
   2. Place concrete for beams, joists and girders monolithic with adjacent slab construction.
   3. Place inserts and other accessories as required accurately in locations indicated.
   4. Chamfer corners.
   5. Locate construction joints where indicated on the Drawings. Where no specific indication is given, Contractor to provide construction joints at his option limiting joints to 30 feet spacing each way; spacing shall be equal in both directions where possible.
   6. Joint locations shall be reviewed by Engineer prior to placing concrete.

F. Exterior Stairs and Platforms:
   1. Apply broom finish to concrete.
   2. Place abrasive nosings on concrete stairs.

G. Chamfer: Chamfer exposed concrete edges 3/4-inch x 3/4-inch unless otherwise indicated on the Drawings.

H. Miscellaneous Items: Perform concrete work for mechanical and electrical trades including but not limited to vaults, valve and meter pits, light pole bases and machine bases.

3.6 TIGHTNESS TESTING OF CONCRETE STRUCTURES

A. Scope:
   1. Hydrostatic tightness testing of each cast-in-place concrete liquid containing structure (whether with open or closed tops), vaults, reservoirs, basins, channels, conduits and similar structures shall be performed in accordance with ACI 350.1R, these specifications and as directed by Engineer.
   2. Provide materials, equipment, labor and incidental items necessary or convenient for the proper tightness testing of the structures as specified herein.
   3. Test adjoining structures separately. Structures adjacent to that being testing shall be dry.

B. Water Source and Disposal of Test Water:
   Water for tightness testing will be provided by Owner.
   1. Transportation of the water from the source to the structure(s) to be tested, as well as permits required, if any, are the responsibility of the Contractor.
   2. Disposal of test water is the responsibility of the Contractor.

C. Preparation:
   1. Tightness testing shall not be performed until the structure is complete and the structure’s concrete has attained its specified compressive strength.
   2. Do not backfill or enclose the structure until after achieving a successful tightness test.
   3. Do not apply membranes such as waterproofing, damp proofing or roofing until after achieving a successful tightness test.
   4. Test structures prior to applying coatings.
   5. Clean structure prior to testing.
   6. Visually inspect structure, and particularly construction joints, for potential leakage points.
   7. Repair cracks and joints showing potential for leakage prior to testing.

8. Temporarily attach measuring tapes at 2 fixed points on the structure as opposite each other as possible, to be used to record water levels and calculate water level changes.
9. Ensure groundwater is brought to the level of bottom of the bottom slab of the structure, or lower, for the duration of the test.
10. Seal fitting penetrations into the structure in such a way that the potential of water loss to occur through the contact surface between the fitting and the concrete will be included in the test.
11. Seal leakage through fitting penetrations before starting the test period. Leakage around and through fitting penetrations shall be included in the test.

D. Filling Tanks:
1. Fill tank at a rate of 4.0 feet per hour or less.
2. Fill structure to 4-inches below the invert of the overflow, or if none exists, to within 1-foot of the top of the structure.
3. Empty and refill the structure as many times as is necessary to meet the acceptance criteria.

E. Testing:
1. Length of Time:
   a. The length of time that the structure shall be filled with water shall be the waiting period followed by the test period:
      1) Waiting Period: 3 days (72 hours) minimum.
      2) Test Period: The theoretical time necessary to lower the water level in the structure 3/8 inch assuming a rate of water loss of 0.05% per day (24 hours), rounded up to the next full day (24 hour) period. However, the test period does not need to exceed 5 days (120 hours).
   b. A test may be discontinued at any time if the acceptance criteria are not being met.
2. Observations to determine if the structure meets the visual acceptance criteria shall be made daily throughout the waiting period and the test period.
3. Measurements to determine if the structure meets the quantitative acceptance criteria shall be made as follows:
   a. At 24-hour intervals during the test period, record the water level at the measuring tapes fixed to the structure.
   b. If precipitation occurs, collect in a container adjacent to the structure if structure is not fully covered. Measure and record collected precipitation.
   c. Upon request, Engineer may allow Contractor to begin to take measurements as specified above, starting anytime during the waiting period.
      1) Record measurements for a length of time equal to the test period and submit to Engineer.
      2) Continue to take measurements while Engineer determines whether the acceptance criteria have been met or not.
      3) If Engineer determines that the visual and quantitative acceptance criteria have been met, the test may be discontinued.
      4) If Engineer determines that either the visual or quantitative acceptance criteria have not been met, continue taking measurements until the end of the test period, or discontinue test to repair the structure.
4. Submit the recorded measurements to Engineer.
5. A restart of the test shall be required when test measurements become unreliable due to unusual precipitation or other external factors.

F. Acceptance Criteria:
1. Visual: No leaking water (running or damp spots) will be permitted.
2. Quantitative:
   a. Engineer will calculate the water volume loss corrected for precipitation gain per 24 hours through the test period.
   b. The corrected water volume loss per 24-hour period shall not be more than 0.05% of the water volume at the beginning of the test measurements.
3. Structures shall be repaired and retested until they meet the required criterion.

3.7 LEAK AND CRACK REPAIRS

A. Repair areas not meeting the acceptance criteria.
   1. Water stopped construction joints which leak shall be repaired by Contractor at no cost to Owner.
   2. Leaking cracks which have formed in the structure and are considered by Engineer to be temperature/shrinkage cracks shall be repaired by Contractor and paid from the cash allowance for crack repair, but only with approval of the Engineer, if Contractor has not exceeded maximum spacing limits of construction joints indicated on the Drawings or otherwise approved by the Engineer. Otherwise, Contractor pays for repair.
   3. Leaking cracks which have formed as a result of Contractor's level of care in construction shall be repaired by Contractor at no cost to Owner.

B. After leak repairs have been made, excess repair materials shall be removed from the surface and injection ports shall be removed and patched.

3.8 PROPORTIONING SCHEDULE (see also notes following schedule)

Mix Design	1
Use	All Concrete Structures
Minimum Cementitious Content (94 lb. sack)	Note 1
Fly Ash (Note 10)	10% to 15%
GGBFS	20% to 30%
Entrained Air (percent)	6 ± 1-1/2
Maximum w/cm Ratio (Note 2)	0.45
Specified Maximum Coarse Aggregate	3/4″
Minimum Compressive Strength (psi) (Note 6)	4,000
Slump Before Adding Water Reducer (inches)	1-4
Slump After Adding Water Reducer (inches) (Notes 4 and 5)	5-8
Water Reducing Admixture Type (Notes 8 and 9)	HRWR or MRWR

NOTES:

1. Refer to mixes in Part 2 of this specification.
2. w/cm – Water to cementitious products ratio. All fly ash plus GGBF slag plus cement shall be included with w/cm ratio calculation.
3. GGBFS content for mass concrete shall be determined by the concrete mix designer to achieve the specified concrete properties, including temperature control.
4. Slumps indicated for mixes with water reducers are target ranges. Slumps outside these ranges are not necessarily grounds for rejection of the concrete. Use of concrete with slumps outside the indicated ranges shall be at Contractor's risk.
5. Slabs which slope more than 1/4-inch per foot shall have a slump after adding water reducer of 2-5 inches.
6. The compressive strength specified here and on the Drawings is the actual required specified compressive design strength (f'_c) at 28 days (unless noted otherwise) for the concrete structures on this Project, and is not to be considered the target strength (f'_{cr}) which the concrete Supplier is required to achieve.
7. Ratio of weight of fine aggregate to weight of coarse aggregate shall not be less than 0.50.
8. The amount of mid-range water reducing admixture (MRWR) added shall be approximately 3 to 12 ounces per 100 pounds of cement, to achieve specified slump.
9. The amount of high range water reducing admixture (HRWR) added shall be approximately 12 ounces per 100 pounds of cement, to achieve specified slump.
10. Ground granulated blast furnace slag (GGBFS) may be substituted for fly ash, if fly ash is not available.

END OF SECTION 03 31 00

SECTION 03 60 00 – GROUTING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the furnishing and placement of grouts.

1.3 REFERENCES

A. Except as herein specified or as indicated on Drawings, the work of this Section shall comply with the following:
   1. ASTM Standard Specifications and Test Methods:
      a. C307 – Tensile Strength of Chemical Resistant Mortars, Grouts, and Monolithic Surfacings.
      b. C413 – Absorption of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
      c. C531 – Linear Shrinkage and Coefficient of Thermal Expansion of Chemical Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
      d. C579 – Compressive Strength of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
      e. C580 – Flexural Strength and Modulus of Elasticity of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
      f. C905 – Apparent Density of Chemical-Resistant Mortars, Grouts, Monolithic Surfacings, and Polymer Concretes.
      g. C939 - Flow of Grout for Preplaced-Aggregate Concrete (Flow Cone Method).
      h. C1107 - Packaged Dry Hydraulic-Cement Grout (Nonshrink).
      i. C1181 - Compressive Creep of Chemical-Resistant Polymer Machinery Grouts.
      j. C1339 - Flowability and Bearing Area of Chemical-Resistant Polymer Machinery Grouts.
   2. Corps of Engineers Specifications:
      a. CRD C621 – Non Shrink Grout Packaged Dry, Hydraulic Cement Grout.

1.4 SUBMITTALS

A. Product Data: Manufacturer's descriptive literature, including surface preparation and installation instructions.

B. Shop Drawings: Include setting locations, templates, and directions for installing anchor rods and other anchorages.

1.5 QUALITY ASSURANCE

A. Use only experienced tradesmen for the work of this Section.

B. Test for flow consistency of 25 to 30 seconds in accordance with ASTM C939 at 30 minutes extended working time at temperature extremes between 45 and 90 degrees F.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Use non-metallic, non-shrink grout for conditions such as column base plates (unless noted otherwise), bearing plates, drilled-in anchor bolts, drilled-in reinforcing dowels, and railing posts.

B. Non-Metallic. Non-Shrink Grout:
   1. Premixed, prepackaged natural aggregate cementitious, non-metallic, non-corrosive, non-staining product.
   2. Complying with CRD C621 and ASTM C1107.
   3. With minimum compressive strength of 6,000 psi at 28 days.
   4. Subject to compliance with requirements, provide one of the following:
      a. Masterflow 555, BASF The Chemical Company.
      b. 1107 Advantage Grout or Edoco Multi-Purpose Grout, Dayton Superior.
      c. NS Grout, The Euclid Chemical Company.
      d. Crystex, L&M Construction Chemicals, Inc.

C. Epoxy Grout:
   1. Three component, high strength, chemically resistant, non-shrink foundation grout.
   2. For equipment bases.
   3. With minimum compressive strength of 10,000 psi at 28 days:
   4. Subject to compliance with requirements, provide one of the following:
      a. Masterflow 648 CP, BASF The Chemical Company.
      b. Sure-Grip Epoxy Grout (J-55 H.E.S.), Dayton Superior.
      c. E^3-G, The Euclid Chemical Company.
      d. Epogrout by L&M Construction Chemicals, Inc.

PART 3 - EXECUTION

3.1 PREPARATION

A. Cleaning:
   1. Clean concrete and masonry bearing surfaces of bond-reducing materials including, but not limited to rust, grease, debris, dust, and oil and roughen to improve bond.
   2. Use suitable mechanical preparation that will give a surface profile that complies with Manufacturer's recommendations.
   3. Rinse thoroughly with liberal quantities of water, leaving concrete saturated but free of standing water.
   4. Clean bottom surface of base plates and bearing plates of rust, grease, debris, dust and oil.

B. Mixing:
   1. Cementitious Grouts:
      a. Add only potable water and use mechanical mixer for minimum of 3 minutes.
      b. Maintain proper curing temperature between 45 degrees F and 90 degrees F.
      c. Comply with Manufacturer's instructions.
   2. Epoxy Grouts: Comply with Manufacturer's instructions.

3.2 INSTALLATION

A. Set loose and attached base plates on steel wedges or other steel adjusting devices.

B. Pack grout solidly between bearing surfaces and bases or plates to ensure that no voids remain.

C. Do not remove wedges or shims, rather cut off flush with edges of base plates if protruding.

D. Finish exposed grout surfaces, protect from weather, and cure.
   1. Maintain proper curing temperature between 45 degrees F and 90 degrees F.

E. Tighten anchor bolts after supported members have been positioned and plumbed and grout has cured.

F. Comply with Manufacturer's instructions.

END OF SECTION 03 60 00

SECTION 08 10 03 – ACCESS HATCHES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the furnishing and installation of access hatches and related accessories.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the pertinent provisions of the following:
   1. AASHTO: Standard Specifications for Highway Bridges, 16th Edition.
   2. ASTM Standards:
      a. A36 - Carbon Structural Steel.
      b. A123 - Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products.
      c. A153 - Zinc Coating (Hot-Dip) on Iron and Steel Hardware.
      d. A283 – Low and Intermediate Tensile Strength Carbon Steel Plates.
      e. A653 - Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by the Hot Dip Process.
      f. A666 - Annealed or Cold-Worked Austenitic Stainless Steel Sheet, Strip, Plate, and Flat Bar.
      g. A780 - Repair of Damaged and Uncoated Areas of Hot-Dip Galvanized Coatings.
      h. A786 – Hot Rolled Carbon, Low-Alloy, High Strength Low Alloy, and Alloy Steel Floor Plates.
      i. A1008 – Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable.
      j. A1011 – Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy with Improved Formability, and Ultra- High Strength.
      k. B209 - Aluminum and Aluminum Alloy Sheet and Plate.
      l. B221 - Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes.
      m. B632 - Aluminum-Alloy Rolled Tread Plate.
      n. D520 - Zinc Dust Pigments.

1.4 SUBMITTALS

A. Product Data: Submit Manufacturer’s printed construction product details indicating materials, individual components, profiles, and finishes for access hatches.

1.5 QUALITY ASSURANCE

A. Access Hatches: Manufactured by a producer who has been in the business for at least 5 years.

B. Qualifications:
   1. Fabrication and Installation Personnel:
      a. Trained and experienced in the fabrication and installation of the materials and equipment.
      b. Knowledgeable of the design and the reviewed submittals.

C. Source Limitations: Obtain materials through one source from a single Manufacturer.

1.6 WARRANTY

A. Provide Manufacturer’s standard warranty.
   1. Materials shall be free of defects in material and workmanship for a period of 5 years from the date of Substantial Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Subject to compliance with requirements, provide products by one of the following:
   1. Bilco Company.
   2. J. L. Industries, Inc.
   3. Karp Associates, Inc.
   4. Milcor Limited Partnership.
   5. Nystrom Building Products Co.

2.2 MATERIALS

A. Cold-Rolled Steel Sheets: ASTM A1008, commercial steel (CS) or drawing steel (DS), Type B, stretcher-leveled standard of flatness, with minimum thickness indicated.

B. Hot-Rolled Steel Sheets: ASTM A1011, commercial steel (CS), Type B, free of scale, pitting, and surface defects, pickled and oiled, with minimum thickness indicated.

C. Steel Plates, Shapes, and Bars: ASTM A36.

D. Metallic Coated Steel Sheet: ASTM A653, commercial steel (CS), Type B, with G60 zinc-iron-alloy coating or G60 mill-phosphatized zinc coating, stretcher leveled standard of flatness, with minimum thickness indicated.

E. Aluminum Sheet: ASTM B209, alloy and temper recommended by aluminum producer and finisher for type of use and finish indicated.

F. Aluminum Extrusions: ASTM B221, alloy 6063-T6.

G. Rolled Steel Floor Plate: ASTM A786, rolled from plate complying with ASTM A36 or ASTM A283, Grade C or D.

H. Aluminum Alloy Rolled Tread Plate: ASTM B632, alloy 6061-T6.

2.3 ACCESS HATCHES

A. General:
   1. Use of the singular form of the word cover in this section includes double leaf covers, where indicated on the Drawings.
   2. Operation of the Cover:
      a. Smooth and easy with controlled operation throughout the entire arc of opening and closing.
      b. Not affected by temperature.
   3. Provide each access hatch with:
      a. Adjustable counterbalanced springs.
      b. Heavy-duty fold-open arm that automatically locks door open at 90 degrees.
      c. Release handle with red vinyl grip that allows for one-handed closure.

B. Cast-in Flush Access Hatches:
   1. Hatch Frame and Cover Material: Mill finish aluminum.
   2. Frame Type:
      a. C channel style with anchor flange or anchor tabs, designed to be cast into concrete flush with the structure's surface.
      b. With EPDM gasket at mating surface with cover.
   3. Cover: 1/4-inch minimum thick diamond pattern tread plate.
   4. Hardware: Type 316 stainless steel.
   5. Size, Hinge Side and Number of Leaves: As indicated on the Drawings.
   6. Loading Capacity: Design for 300 lbf/sq. ft. pedestrian live load with a maximum deflection of 1/150th of the span.

7. Hinges:
   a. Heavy forged Type 316 stainless steel hinges, having a minimum 1/4-inch diameter Type 316 stainless steel pins, designed to pivot so the covers do not protrude into the channel frame.
   b. Specifically designed for horizontal installation.
   c. Through bolted to the cover with tamperproof Type 316 stainless steel lock bolts.
   d. Through bolted to the frame with Type 316 stainless steel bolts and locknuts.
8. Provide NPS 1-1/2 drainage coupling integral in channel frame for a pipe to conduct water to drainage system or exterior of structure.
9. Provide the number and size of compression spring operators enclosed in telescoping tubes necessary to provide, smooth, easy, and controlled cover operation throughout the entire arc of opening and to retard downward motion of the cover when closing.
   a. Tubes:
      1) Design upper tube in outer position to prevent accumulation of moisture, grit, and debris inside the lower tube assembly.
      2) Interlock lower tube with a flanged support shoe fastened to a formed gusset support plate.
10. Snap Locks: Type 316 stainless steel, with fixed handle, mounted on the underside of the cover.
11. Provide removable exterior turn and lift handle with a spring-loaded ball detent to open the cover.
    a. Protect the latch release with a flush, gasketed, removable screw plug.
12. Acceptable products, subject to the provisions of this specification:
    a. Bilco Company, Type J-AL.
    b. Or equal.

C. Surface Mounted Access Hatches (Potable Water Applications):
1. Surface mounted style with overlapping cover with turned down edges.
2. Mill finished aluminum angle frame with internal mounting flange.
3. Mill finished diamond pattern aluminum tread plate cover.
4. Size: As indicated on the Drawings.
5. Loading Capacity: 100 lbf/square foot pedestrian live load.
6. Gasket: Extruded EPDM rubber gasket permanently adhered to cover.
7. Hinges: Heavy-duty, stainless steel pintle hinges with type 316 stainless steel hinge pins.
8. Latch:
   a. Type 316 stainless steel slam lock with fixed interior handle and removable exterior turn and lift handle.
   b. Protect the latch release with a flush, gasketed, removable screw plug.
9. Lift Assistance:
   a. Gas strut lifting stainless steel or powder-coat finish mechanism.
   b. Automatic hold-open arm with grip handle release.
10. With full welded exterior padlock hasp.
11. With safety posts and chains.
12. Hardware: Type 316 stainless steel.
13. Coat aluminum which is to be in contact with concrete with bituminous mastic.
14. Acceptable products, subject to the provisions of this specification:
    a. Bilco Company, Type SM.
    b. Or equal.

2.4 FABRICATION

A. Provide access hatch assemblies manufactured as integral units ready for installation.

B. Provide protection of hatch surfaces, removeable after construction.

C. Latching Mechanisms: Furnish sufficient number of latches to hold doors in flush, smooth plane when closed.

PART 3 - EXECUTION

3.1 PREPARATION

A. Advise installers of other work about specific requirements relating to access hatch installation.

3.2 INSTALLATION

A. Install access hatches in conformance with the Manufacturer's recommendations.

B. Set frames accurately in position and attach securely to supports with plane of face panels aligned with adjacent surfaces.

C. In hatches with a frame mounted drain coupling, route piping from drain coupling to exterior of structure.

3.3 ADJUSTING, CLEANING, AND PROTECTING

A. Adjust hatches and hardware after installation for proper operation.

B. Remove hatches and frames that are warped, bowed, or otherwise damaged and install replacement hatches meeting the requirements of this specification.

C. Prior to acceptance of the Work of this Section, remove protective coverings and clean affected areas in accordance with Division 01 Section “Cleaning and Waste Management.”

D. Protect surface of hatch during construction of remainder of the Project.

END OF SECTION 08 10 03

SECTION 31 22 00 – GRADING

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the furnishing and installation of the major items listed below:
   1. Excavation.
   2. Cutting and filling.
   3. Rough and finish grading.
   4. Disposal of excavated materials.
   5. Excess water control.
   6. Pavement subgrade.

1.2 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. AOAC - Association of Official Agricultural Chemists: Methods of Testing.
   2. ASTM Standards:
      a. D422 - Method for Particle-Size Analysis of Soils.
      b. D698 - Laboratory Compaction Characteristics of Soil Using Standard Effort.
      c. D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort.
      d. D2487 - Classification of Soils for Engineering Purposes.
   3. State DOT Current Standards:
      a. Specifications for Construction.
      b. Standard Plans.

1.3 DEFINITIONS

A. Terms:
   1. Driving Surface: A pavement, curb, or sidewalk.
   2. Excavation:
      a. Removing the following materials from their present location:
         1) Native below-grade material such as soil, rocks, boulders less than 1/2 cubic yard in volume, and buried trees.
         2) Man-made items such as, but not necessarily limited to:
            a) Bituminous and concrete paving.
            b) Curbs.
            c) Riprap.
            d) Head walls.
            e) Underground utilities.
            f) Manholes and catch basins.
            g) Foundations.
            h) Sidewalks.
   3. Fill: Soil, native material, imported material or other material which is placed over the subgrade, or excavated areas; under roadways, parking areas, walks, buildings, or structures; and anywhere else on the Site.
   4. Grading: The act of moving soil from one location on the Site to another to achieve the contours and elevations as indicated on the Drawings and as herein specified.
   5. Hardpan:
      a. Cemented soil layers.
      b. Is not hard clay layers that are not cemented.
   6. Imported Material: Soil material which is purchased by Contractor and hauled onto the Site.
   7. Native Material: Soil and other natural earth materials, except rock, which are existing on the Site prior to the start of Work.
   8. Pavement: Any combination of subbase, base course and concrete, bituminous or aggregate surface course, including shoulders, placed on a subgrade. Includes roadways, parking areas, driveways, and bituminous seal coat.

9. Rock Excavation:
   a. Excavation of igneous, metamorphic or sedimentary rock or hardpan which cannot be excavated without continuous drilling or blasting or continuous use of a ripper or other special equipment.
   b. Excavation of boulders of 1/2 cubic yard or more in volume.
10. Structure: A building, retaining wall, tank, footing, slab, or other similar construction.
11. Subbase: The layer of material placed on the subgrade as part of the pavement structure.
12. Subgrade:
   a. Below structures and below fill on the Site: The top elevation of the undisturbed native material after all topsoil is stripped off and excavation is completed.
   b. Below driving surfaces: The bottom elevation of the subbase.
13. Surface Improvement: All improvements beyond what might be encountered in an open unimproved field.
14. Undercut: Excavation of native material from below the bottom of footings, floors, structures, and subbases.
15. Utility Structure: Manhole, catch basin, valve chamber, junction chamber, water main valve, or other similar utility appurtenance.
16. Other Definitions: Other earthwork terms not defined in the Contract Documents shall be as defined in state DOT Standard Specifications for Construction.

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

A. Quantities: Determine the required quantities of all earthwork materials and operations and use as the basis for the lump sum Bid.

1.5 QUALITY ASSURANCE

A. Testing will be performed in accordance with Division 01 Section “Testing Services for Buried Utilities, Roadways, and Site Projects” and the Contractors Quality Control Plan.

B. Compaction:
   1. Predominately Granular Soils:
      a. Density shall be determined by using the modified Proctor method, ASTM D1557.
      b. Compact fill to at least 95% maximum density.
      c. The first 12 inches of subgrade below all driving surfaces, structures, utility structures, and fill on the Site:
         1) Shall be tested for density.
         2) Compact to at least 95% maximum density if the existing density is below 95%.
   2. Predominately Cohesive Soils:
      a. Density shall be determined by using the standard Proctor method, ASTM D698.
      b. Compact fill to at least 98% maximum density.
      c. The first 12 inches of subgrade below all driving surfaces, structures, utility structures, and fill on the Site:
         1) Shall be tested for density.
         2) Compact to at least 98% maximum density if the existing density is below 95%.

1.6 PROJECT CONDITIONS

A. Dust Control:
   1. Use all legal means necessary to control dust on and near the Work and on and near all off-site borrow areas if such dust is caused by Contractor's operations during performance of the Work or if resulting from the condition of the Site when earthwork operations are suspended.
   2. Treat haul roads, delivery roads, temporary site access roads and other surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other work on the Site.
   3. Scrape, broom, or vacuum adjacent streets to remove tracked dirt every Friday afternoon, or more often as necessary if directed by Engineer. Utilize vacuum if dust from brooming is excessive in opinion of Engineer.

B. Existing Structures, Utility Structures, and Utilities:
   1. Call MISS DIG to locate all existing underground utilities prior to starting excavation.
   2. Where utilities, utility structures, or structures are encountered which are in active use:
      a. Provide adequate protection for them.
      b. Be responsible for damages to them.
   3. Provide stand-by utility service if temporary removal is necessary for a period exceeding 2 hours.
   4. Where utility service connections to occupied buildings must be temporarily disconnected, give 48 hours notice to the affected occupants of the time and duration of the anticipated shut off.
   5. Notify Fire Department 48 hours in advance if water main or fire supply line shutoff is required.
   6. Raise, lower, or move underground utilities, utility structures, or structures which interfere with the utility, utility structure, or structure being constructed as part of this Work.

C. Special Filling Requirements:
   1. Comply with the regulations of the state DOT, county road, and railroad company engineering departments with regard to placing fill and compaction in their respective rights-of-way.
   2. Obtain necessary permits for filling activities off Site.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:
   1. Approval Required: All material shall be subject to the approval of Engineer or independent testing laboratory.
   2. Notification: For approval of imported material, notify Engineer or independent testing laboratory at least 1 week in advance of intention to import material, designate the proposed borrow area, and permit Engineer or independent testing laboratory to sample as necessary from the borrow area for the purpose of making acceptance tests to prove the quality of the material.

B. Material Sources and Uses:
   1. Imported Material:
      a. Fill in undercut.
      b. Sand subbase for paving
      c. Sand bedding and backfill for utilities
      d. Fill below structures, utility structures, or driving surfaces.
      e. Topsoil.
   2. Native material, unless quantity is not sufficient; then shall be imported material.
      a. Fill not below structures, utility structures, or driving surfaces.

C. Native Materials Used as Fill:
   1. Exclusive of peat, organic matter, or frozen lumps.
   2. Containing no rocks or lumps over 3 inches in greatest dimension.
   3. With moisture content between 0.5 % below to 2.0 % above optimum moisture content.
   4. Obtain approval for using native material as fill from Engineer or independent testing laboratory.

D. Stone Stabilization Course:
   1. Crushed Stone: 1-1/2 inches maximum size.
   2. Filter Fabric:
      a. By Mirafi; Amoco; Exxon; Nicolon; or equal.
      b. Monofilament polypropylene woven fabric.
      c. Equivalent opening size of 70.

E. Topsoil: See Specifications; Division 32 Sections “Turf Grasses” and “Exterior Plants.”

PART 3 - EXECUTION

3.1 EXCAVATION

A. Topsoil:
1. Remove all topsoil to depth at which subsoil is encountered, from all areas under buildings, driving surfaces, and from all areas which are to be cut to lower grades or filled.
2. Topsoil may be used to create landscape berms.
3. With Engineer's approval, topsoil to be used for finish grading may be stored on the Site.
4. Other topsoil may be used for fill in noncritical areas with approval of Engineer.

B. Obstructions:
1. Remove and dispose of buried trees, rocks, boulders, driving surfaces, pipes and the like, as required for the performance of the Work.
2. Exercise care in excavating around catch basins, inlets, and manholes.
3. Avoid removing or loosening castings or pushing dirt into utility structures.
4. Repair or replace damaged or displaced castings; remove dirt entering utility structures during the performance of the Work at no additional cost to Owner.

C. Cutting Paved Surfaces and Similar Improvements:
1. All cuts shall be a minimum of 1-foot wider than trench on each side. When the remaining width of paved surface is less than 4 feet, remove the entire paved surface.
2. Before removing pavement, mark the pavement neatly, paralleling pipe lines and existing street lines. Space the marks the width of the trench.
3. Concrete:
   a. Pavements: Saw cut if over 3 feet from expansion or construction joint, otherwise remove to joint.
   b. Sidewalks: Remove to joints.
   c. Curb and gutter: Remove to joints.
4. Final surface Course Bituminous: Saw cut joints unless otherwise approved by Engineer.
5. Do not disturb or damage the adjacent pavement. If the adjacent pavement is disturbed or damaged, remove and replace the damaged pavement.
6. Contractor may tunnel under curbs that are encountered. Replace curb disturbed by construction.
7. Dispose of materials removed.

D. Utilities to Be Abandoned:
1. When pipes, conduits, sewers, or other utilities or utility structures are removed from the excavation leaving dead ends in the ground, fully plug such ends with brick and mortar.
2. Entirely remove abandoned utility structures unless otherwise specified or indicated on the Drawings.
3. Remove from the excavation all materials which can be readily salvaged and store on the Site.
4. All salvageable materials will remain the property of Owner unless otherwise indicated by Owner.

E. Undercut:
1. If soft material, which in the opinion of Engineer or independent testing laboratory is not suitable, is encountered below a structure, utility structure, or driving surface, Engineer may order the removal of this soft material and its replacement with specified material in order to make a suitable foundation for the construction of the structure, utility structure, or driving surface.
2. All undercutting made at the order of Engineer will be paid for on the basis of the actual quantity of material excavated. Do not proceed further until instructions are received and necessary measurements made for purposes of establishing additional volume of excavation.
3. No extra payment will be made if removal is required as a result of poor dewatering techniques.
4. Undercutting which is specifically indicated on the Drawings or herein specified, shall be included in the base Bid.
5. Soil removed may be used as fill in areas not below driving surfaces, structures, or utility structures.
6. Compact subgrade at bottom of undercut prior to placing fill.
7. Place and compact specified fill in undercut.
8. Lateral extent of undercut shall be a horizontal distance equal to the depth of undercut below structure, utility structure, or driving surface.
9. Bottom elevations of undercut.

F. Excavating:
1. All excavation shall be by open cut from the surface except as herein specified or as indicated on the Drawings.
2. If required because of excess water conditions, place stone stabilization course prior to proceeding with construction. Place filter fabric over stone stabilization course.

G. Rock Excavation:
1. Notify Engineer prior to removal if rock is encountered.
2. Where rock is encountered within the excavation, expose the surface of the rock sufficient to permit adequate measurements to be taken before the rock excavation is started.

3.2 FILL

A. General:
1. Do not place fill until the subgrade been examined by Engineer or independent testing laboratory.
2. Place fill in even layers not exceeding 10 inches in depth and thoroughly compact as herein specified.
3. Do not place additional fill until compaction on a lift complies with specification requirements.
4. If an analysis of the soil being placed shows a marked difference from 1 location to another, the fill being placed shall not be made up of a mixture of these materials.
5. Handle each different type of material continuously so that field control of moisture and density may be based upon a known type of material.
6. Do not place fill following a heavy rain without first making certain on isolated test areas that compaction can be obtained without damage to the already compacted fill.
7. Do not place fill on frozen subgrade.

B. Compaction:
1. Select compaction equipment to achieve the required compaction without damaging adjacent structures, utility structures, or driving surfaces.
2. Suggested Equipment Selections:
   a. If soil is predominantly granular, use pneumatic tired or vibratory drum rollers loaded to not less than 325 pounds in accordance with rated inch of tire width.
   b. For clay fills, compact each layer with sheepsfoot rollers. Rollers shall have staggered rows of feet projecting not less than 7 inches from drum and shall be loaded to produce at least 200 pounds per square inch of tamping area in contact with the ground.
   c. Compact around structures and utility structures with hand operated vibrating compactors for granular soils and Barco rammer type compactors for clay soils.

C. Moisture:
1. Compact all fill with the moisture content as specified.
2. If fill material is too wet, provide and operate approved means to assist the drying of the fill until suitable for compaction. See Geotechnical report and consult testing agency and construction manager for direction on using lime or other materials to try the soil.
3. If fill material is too dry, provide and operate approved means to add moisture to the fill layers.

3.3 GRADING

A. General:
1. Perform all rough and finish grading required to attain the elevations indicated on the Drawings.
2. Perform rough grading to an accuracy of ± 0.10 feet.
3. Perform finish grading to an accuracy of ± 0.05 feet.
4. Comply with all excavating and fill requirements specified herein during grading operations.

B. Grading Around Buildings: Control the grading around buildings so the ground is pitched to prevent water from running into the excavated areas of a building or damaging other Site features.

C. Treatment After Completion of Grading:
1. After grading is completed, permit no further excavation, filling, or grading, except with the approval of Engineer.
2. Use all means necessary to prevent the erosion of freshly graded areas during construction and until such time as permanent drainage and erosion control measures have been installed.

D. Topsoil: All graded areas, outside of buildings and driving surfaces, shall receive 4 inches of topsoil.

3.4 EXCESS WATER CONTROL

A. Regulations and Permits: Comply with soil erosion control permits in accordance with Mich. P.A. 451, Part 91 of 1994, the Natural Resource and Environmental Protection Act, and all pertinent rules, laws, and regulations.

B. Unfavorable Weather:
   1. Do not place, spread, or roll any fill material during unfavorable weather conditions.
   2. Do not resume operations until moisture content and fill density are satisfactory to Engineer or independent testing laboratory.

C. Pumping and Drainage:
   1. Provide, maintain, and use at all times during construction adequate means and devices to promptly remove and dispose of all water from every source entering the excavations or other parts of the Work.
   2. Dewater by means which will ensure dry excavations, preserve final lines and grades, and do not disturb or displace adjacent soil. Use wells, portable pumps, temporary underdrains or other methods as is necessary.
   3. Perform Pumping and Drainage:
      a. In such a manner to cause no damage to property or structures and without interference to the rights of the public, owners of private property, pedestrians, vehicular traffic, or the work of other contractors.
      b. In accordance with all pertinent laws, rules, ordinances, and regulations.
   4. Do not overload or obstruct existing drainage facilities.
   5. Provide berms or channels to prevent flooding of subgrade. Promptly remove all water collected in depressions.

3.5 DISPOSAL OF EXCESS EXCAVATED MATERIAL

A. General:
   1. Remove and properly dispose of all excavated material not needed to complete filling and grading.
   2. Dispose of excess excavated material to the Steelcase parcel immediately west of the project site. Coordinate with Construction manager.
   3. Dispose of excess topsoil on the Steelcase parcel immediately west of the project site. Coordinate with Construction manager.
   4. Disposal of all materials shall not violate laws, rules, regulations, and the like regarding the filling of flood plains, wetlands, and other environmentally sensitive areas.
   5. Provide adequate controls to maintain disposal sites in a neat and safe conditions by periodic leveling of material and such other practices as are necessary.
   6. Provide all soil erosion control measures necessary to prevent soil erosion and sedimentation of wetlands, rivers, ditches, or similar low-lying areas.
   7. Grade and hydromulch the disposal area.

3.6 CLEANUP

A. Upon completion of the work of this Section, remove all excess excavated material, trash, and debris resulting from construction operations. Remove equipment and tools. Leave the Site in a neat and orderly condition acceptable to Engineer.

END OF SECTION 31 22 00

SECTION 31 23 24 – FLOWABLE FILL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the furnishing and installation of flowable fill.

1.3 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. ASTM Standards, Specifications, Methods, Test Methods and Classifications:
      a. C33 - Specification for Concrete Aggregates.
      b. C39 - Test Method for Compressive Strength of Cylindrical Concrete Specimens.
      c. C94 - Specification for Ready-Mixed Concrete.
      d. C136 - Sieve Analysis of Fine and Coarse Aggregates.
      e. C150 - Specification for Portland Cement.
      f. C260 - Specification for Air-Entraining Admixtures for Concrete.
      g. C618 - Fly Ash and Raw or Calcined Natural Pozzolan for Use as a Mineral Admixture in Portland Cement Concrete.
   2. ACI - American Concrete Institute:
      a. 211.1 - Standard Practice for Selecting Proportions for Normal, Heavyweight and Mass Concrete.
      b. 304R - Guide for Measuring, Mixing, Transporting and Placing Concrete.
      c. 304.2R - Placing Concrete by Pumping Methods.
      d. 305R - Hot Weather Concreting.
      e. 306R - Cold Weather Concreting.
   3. MDOT:
      a. 2003 Standard Specifications for Construction.
      b. Standard Plans.

1.4 DESIGN AND PERFORMANCE REQUIREMENTS

A. Formwork: The design and construction of all formwork shall be the responsibility of Contractor.

B. Mix Proportions: Select flowable fill proportions according to the procedures specified herein to achieve the specified performance requirements.

1.5 SUBMITTALS

A. Design Data:
   1. Submit flowable fill mix design.
   2. Allow for 28-day testing of trial mixes in the Project's schedule, if trial mixes are required.
   3. Required Information:
      a. Dry weights of cement.
      b. Saturated surface-dried weights of fine aggregate.
      c. Quantities, type and name of all mix design contents.
      d. Weight of water.

B. Test Reports:
   1. Submit reports of trial mix and field compression, air content and slump tests.
   2. Furnish copies to Engineer and Contractor.

1.6 QUALITY ASSURANCE

A. Installation Personnel Qualifications:
   1. Trained and experienced in the installation of the materials.
   2. Knowledgeable of the design and the reviewed mix designs.

B. Flowable Fill Supplier Qualifications:
   1. Ready-mix concrete producer.
   2. Experienced in design and control of flowable fill.

C. Testing of Flowable Fill: In accordance with concrete testing provisions of Division 01 Section "Testing Services for Buried Utilities, Roadways, and Site Projects," except as follows:
   1. Air entrainment, unit weight and slump only need to be determined for each set of cylinder samples, not more often.
   2. Cylinders shall be air cured at room temperature in the cylinder molds.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Cement:
   1. Portland cement, ASTM C150, Type I.
   2. Do not use different types or manufacturers of cement interchangeably without Engineer's approval.

B. Fly Ash: ASTM C618, Type C or F.

C. Aggregates:
   1. Grade aggregates according to procedures of ASTM C136.
   2. Aggregates shall be inert, non-chemically reactive, and non-radioactive [, and shall not contribute components that would be detrimental to drinking water quality] .
   3. Fine aggregate: ASTM C33 [or MDOT 902 Fine Aggregate 2NS].

D. Water: Clean, fresh, and potable.

E. Admixtures:
   1. Chlorides:
      a. No admixture shall contain more than 0.1% water soluble chloride ions by mass of cementitious material.
      b. No admixture shall contain calcium chloride.
   2. Air-Entraining: Daravair series or Darex series, by W.R. Grace & Company; Micro Air, by Master Builders; or equal.
   3. Stable Air Generator: Darafill, by W.R. Grace & Company; Flow-Air, by Axim Concrete Technologies; or equal.

2.2 MIXES

A. Methods of Proportioning Mixes:
   1. Past performance: Only if required test data is available and submitted.
   2. Trial mixes: If required test data is not available.

B. Proportioning by Past Performance:
   1. Select proportions of materials for flowable fill in accordance with ACI 211.1, in order to produce flowable fill that:
      a. Is within the specified compressive strength range.
      b. Has good placability and low segregation.
      c. Is self-leveling, self-compacting and self-curing.
   2. The target compressive strength of the flowable fill shall be an average of the maximum and minimum values of specified compressive strength.

3. Documentation:
   a. Where the flowable fill production facility has 10 or more field strength tests for flowable fill produced with similar materials and under similar conditions, these tests may be used to demonstrate that the proposed proportions will produce flowable fill within the specified compressive strength range.
   b. Where the flowable fill production facility does not have test records specified herein, flowable fill proportions shall be established based on trial mixtures in accordance with Article 2.2 C.
4. Provide mix design, test records and other documentation to Engineer at least 14 days prior to placement.
5. Should trial mixes be required, place no flowable fill until results from the 28-day tests have been reviewed and approved by Engineer.

C. Proportioning by Trial Mixes:
1. Select proportions of materials for flowable fill in accordance with ACI 211.1, in order to produce flowable fill that:
   a. Is within the specified compressive strength range.
   b. Has good placability and low segregation.
   c. Is self-leveling, self-compacting and self-curing.
2. Prepare trial mixes [of 1 cubic yard each minimum and deliver to the Project Site] for each mix design. Upon Contractor request, Engineer may waive trial mix testing for some mix designs.
3. Make trial mixes using at least 3 different water-cementitious ratios or cementitious contents that will produce a range of compressive strengths encompassing an average of the maximum and minimum values of the specified compressive strength range.
4. Design Trial Mixes to Produce:
   a. A slump within ± 0.75-inch of maximum permitted.
   b. For air-entrained flowable fill, an air content within ± 1.0% of maximum allowable.
   c. For flowable fill with a stable air generator, an air content within the specified range.
5. Make 6 cylinders from each trial mix and cured in accordance with ASTM C31 or C192, as applicable. The testing laboratory will test the cylinders in accordance with ASTM C39 at the times listed as follows:
   a. 1 at 3 days.
   b. 1 at 7 days.
   c. 1 at 14 days.
   d. 2 at 28 days.
   e. 1 spare.
6. From results of cylinder tests plot a curve showing relationship between water cementitious ratio or cementitious content and compressive strength at the 28 day test age.
7. Use the water-cementitious ratio or cementitious content for flowable fill shown by the curve to produce an average of the maximum and minimum values of the specified compressive strength range.
8. Provide mix design, test records and other documentation to Engineer at least 7 days prior to placement.
9. Place no flowable fill until results from the 28-day tests have been reviewed by Engineer.

D. Mix Design Performance Requirements:
1. Mix 2:
   a. Flowable fill which may be machine excavated in the future.
   b. Compressive Strength Range f'c: 75 to 150 psi at 28 days.
   c. Slump: [6 to 8]inches, minimum.
   d. Air Content: 15% to 35% utilizing stable air generator.

2.3 SOURCE QUALITY CONTROL

A. Production and Delivery:
1. Batch, mix and transport flowable fill in accordance with ASTM C94.
2. Furnish a delivery ticket with each batch of flowable fill before unloading at the Site, on which is printed, stamped or written the following information:
   a. Name of ready-mix batch plant.
   b. Serial number of ticket.
   c. Date and truck number.
   d. Name of Contractor.
   e. Job name and location.
   f. Specific class or designation of flowable fill.

g. Amount of flowable fill (cubic yards).
h. Time loaded or of first mixing of cement and aggregates.
i. Type, name and amount of admixture.
j. Type, brand and amount of cement and fly ash.
k. Total water content by producer (or water-cementitious ratio).
l. Maximum size of aggregate.
m. Weight of fine aggregate.

3. Flowable fill delivered in an outdoor temperature lower than 40 degrees F shall arrive at the Site of the Work having a temperature of not less than 50 degrees F and not greater than 90 degrees F unless otherwise specified or permitted by Engineer's representative.
4. Complete the discharge of the flowable fill within 2-1/2 hours after introduction of mixing water to the cement or 2 hours after arriving at the Site, whichever is sooner.

PART 3 - EXECUTION

3.1 PREPARATION

A. Preplacement Inspection:
1. Before placing flowable fill, inspect and complete the formwork installation.
2. Notify other trades to permit the installation of their work; cooperate with other trades in setting such work, as required.

B. Components:
1. Seal pipes, manholes and similar components not intended to be filled.
2. Restrain from floatation.

3.2 PLACEMENT

A. General:
1. Ensure flowable fill fills all cavities required to be filled.
2. Avoid dislocation of components.
3. Place in lifts if required to prevent floatation or to limit fluid pressures on formwork, walls, flexible wall pipe, or similar conditions.
4. Wait 24 hours, minimum, between the start of subsequent placement lifts.

B. Handling:
1. Handle flowable fill from mixer to place of final deposit in chutes, carts, buggies, conveyors, pumps or crane buckets.
2. Do not deliver flowable fill by a method with a free fall of more than 3 feet.
3. Take every possible precaution to prevent separation or loss of ingredients while transporting flowable fill.

C. Rate: Carry on placement at such a rate that flowable fill surfaces not yet to grade or lift shall not have reached their initial set before additional flowable fill is placed.

D. Retempering: Do not add water to the flowable fill once it has left the ready-mix plant.

E. Cold-Weather Operations:
1. Comply with the recommendations of ACI 306R.
2. Recommended Protective Measures:
a. Heating materials.
b. Providing insulating blankets and windbreaks.
c. Use heated enclosures.
3. Do not use frozen materials or materials containing ice or snow.
4. Do not place on frozen subgrade.

F. Hot-Weather Operations:
   1. Comply with the recommendations of ACI 305R.
   2. Recommended Protective Measures:
      a. Cooling materials.
      b. Placement during cooler hours of the day.
      c. Providing shading and windbreaks.

3.3 PROTECTION

A. Cold Weather:
   1. Keep all freshly placed flowable fill from damage due to low temperatures when the mean daily temperature is below 40 degrees F (4.5 degrees C) in accordance with ACI 306R.
   2. Protect flowable fill from freezing until hardened, 36 hours minimum.

B. Loading: Protect flowable fill from construction, traffic or other loads until sufficient strength has been reached.

END OF SECTION 31 23 24

SECTION 31 25 00 – EROSION AND SEDIMENTATION CONTROLS

PART 1 - GENERAL

1.1 SUMMARY

A. Soil Erosion and Sedimentation Control Rules and Regulations of the Gun Lake Tribe.

B. This Section includes the furnishing, installation and maintenance of soil erosion and sedimentation control (SESC) measures.
   1. Minimum SESC measures/Best Management Practices (BMP) are indicated on the Drawings. These measures are to be installed correctly before any grading or excavating begins on the Site. Contractor may add additional BMP's as required by their operations, such as temporary stock piles, equipment storage etc.
   2. Stage Construction and stabilization activities to minimize the amount of disturbed area at any one time.
   3. Remove sediment caused by erosion from storm water before it leaves the Site or enters waters of the state.
   4. Place soil piles away from drainage courses. Soil piles must be protected from precipitation and wind with non-erosive covers or other BMP's.
   5. Provide anti-tracking areas for haul roads and equipment. Sweep streets, parking areas regularly as needed.
   6. Dust control must be implemented on all sites exposed to wind erosion.
   7. Keep copies of permits and inspections on Site at all times.

C. This section also includes requirements for Contractor supplied Certified Storm Water Operator.

1.2 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the work of this Section shall comply with the following:
   1. Soil erosion and sedimentation control rules and guidelines of:
      a. State of Michigan R323.2190 National Permit for stormwater discharge from Construction (Michigan's "Permit by Rule").
      b. Michigan Natural Resources and Environmental Protection Act, Part 31 of Act 451 of 1994 Soil Erosion and Sedimentation Control (Water Resources Protection Act).
      c. Part 91, Soil Erosion and Sedimentation Control, of the Natural Resources and Environmental Protection Act (Soil Erosion and Sedimentation Control (SESC).
      d. EGLE Nonpoint Source Best Management Practices Manual.
   2. ASTM Standards:
      a. A974 - Standard Specification for Welded Wire Fabric Gabions and Gabion Mattresses (Metallic-Coated or Polyvinyl Chloride (PVC) Coated).
      b. C33/C33M - Standard Specification for Concrete Aggregates.
      c. D4491 - Standard Test Methods for Water Permeability of Geotextiles by Permittivity.
      d. D4751 -Standard Test Method for Determining Apparent Opening Size of a Geotextile.
      e. D4992 - Standard Practice for Evaluation of Rock to be Used for Erosion Control.
      f. D5313 - Standard Test Method for the Evaluation of Durability of Rock for Erosion Control Under Wetting and Drying Conditions.
      g. D6092 - Standard Practice for Specifying Standard Sizes of Stone For Erosion Control.
      h. D6459 – Standard Test Method for Determination of Erosion Control Blanket (ECB) Performance in Protecting Hillslopes from Rainfall-Induced Erosion.
      i. D6461, D6462 - Standard Practice for Silt Fence Materials and Installation.
      j. D6599 - Practice for Construction of Live Fascines on Slopes.
      k. D6711 - Practice for Specifying Rock to Fill gabions, Revet Mattresses, and gabion Mattresses.

1.3 SUBMITTAL

A. Action Submittals (Manufacturers information):
   1. Mulch blankets.
   2. Geotextile fabric.
   3. Silt Fence.
   4. Inlet Protection.
   5. Seed mixtures.
   6. Tacking Agents.
   7. Fertilizer.

B. Informational Submittals:
   1. Copy of SESC Permit and EGLE Notice of Coverage.
   2. Name and certification number of certified storm water operator that will be responsible for Site inspections.
   3. Sequence of Construction in sufficient detail as requested by Engineer.
   4. Contractors soil erosion control plan.

1.5 QUALITY ASSURANCE

A. Performance Standard:
   1. Compliance with the Soil Erosion Control Permit (Part 91) and the Michigan Permit by Rule. The SESC measures indicated on the Drawings and specified here in are a minimum requirement. If more SESC measures are required to comply with the permit, notify the Engineer responsible for preparation of the SESC plan for plan amendment. Additional SESC measures required due to the Contractor's operations will not be considered for additional payment.

B. SESC Preconstruction Meeting:
   1. Conduct a field evaluation of the Site with the Engineer, Certified Storm Water Operator, the Local Enforcing Agent, Construction Manager, General Contractor, and the Earthwork Contractor's Superintendent after all initial SESC measures are installed and prior to any excavation work.
   2. This meeting shall be scheduled and organized by the Construction Manager.
   3. Review the installed SESC measures by walking the Site and confirm compliance to the Permit and the approved SESC Plan.
   4. Review the location for display of the permit.
   5. Review location for SESC inspection log.

C. Stop Work Order:
   1. Owner reserves the right to issue a Stop Work Order if soil erosion and sedimentation controls are not properly installed or maintained.
   2. Work performed under a Stop Work Order will not be considered for payment.
   3. Costs resulting from delay due to issuance of a Stop Work Order shall be the responsibility of Contractor.

1.6 DELIVERY, STORAGE AND HANDLING

A. Deliver materials in original, unbroken, brand marked containers or wrapping as applicable.

B. Handle and store materials in a manner which will prevent deterioration, damage, contamination with foreign matter, damage by weather or elements, and in accordance with manufacturer's directions.

C. Reject damaged, deteriorated, or contaminated material and immediately remove from the Site. Replace rejected materials with new materials at no additional cost to Owner.

PART 2 - PRODUCTS

2.1 SOIL EROSION AND SEDIMENTATION CONTROL MATERIALS

A. Stabilized Construction Entrance:
   1. Stabilize a pad of clean crushed stone located at points where traffic will be accessing a construction site. Minimize construction access points to locations as indicated on the Drawings.

2. Stone Size - Use ASTM C33, size No. 2 (2-1/2-inch to 1-1/2-inch) or 3 (2 inch to 1 inch). Use clean crushed angular stone. Crushed concrete of similar size may be substituted, but will require more frequent upgrading and maintenance.
3. Place on woven geotextile fabric if underlying soils are soft. TerraTex GS, or equal.
4. Thickness: Not less than 6 inches.
5. Width: Not less than full width of points of ingress or egress or a minimum of 20 feet.
6. Length: 50 feet minimum where the soils are course grained (sands or gravels) or 100 feet minimum where soils are fine grained (clays or silts), except where the traveled length is less than 50-feet or 100 feet respectively. These lengths may be increased where field conditions dictate. Stormwater from up-slope areas shall be diverted away from the stabilized pad where the slope of the access road exceeds 5%, a stabilized base of Hot Mix Asphalt Base Course.

B. Temporary Vegetation:

Seed Type	Lower Peninsula (south of US10)*	Lower Peninsula (north of US10)*	Upper Peninsula*	Seeding Rate
Oats, Barley	4/1 to 9/15	4/15 to 8/1	5/1 to 8/1	2 lbs/1,000 sft
Annual Rye	8/1 to 10/15	8/1 to 10/10	8/1 to 11/1	3 lbs/1,000 sft
Wheat	9/20 to 10/15	9/10 to 10/10	9/10 to 10/1	3 lbs/1,000 sft
Buckwheat	6/1 to 7/15	6/1 to 7/15	6/15 to 7/15	2 lbs/1,000 sft
Perennial Ryegrass	8/1 to 10/15	8/1 to 10/1	8/1 to 10/1	1 lbs/1,000 sft
*Seasonal Limitation Dates				

C. Mulch Blanket:
1. 4H:1V: Straw; North American Green S-75; LANDLOK S1; or equal
2. 3H:1V: Straw; North American Green S-150; LANDLOK S2; or equal.
3. 2H;1V: Straw and Coconut: North American Green SC-150; North American Green P-300, LANDLOK SC2; or equal.
4. 1.5H:1V: Coconut: North American Green C-125; LANDLOK C2; or equal.
5. Anchoring Staples or Pins:
6. Hardwood stakes at least 6 inches long; or
7. North American Green Bio-Stake blanket pins at least 6 inches long;
8. Steel anchoring pins are not allowed without written permission of the Engineer.

D. Hydro-Mulch:
1. Biodegradable, Hydraulic Mulch (HM) composed of 100% recycled cellulose fibers and a tackifier.
2. Terra-Mulch Cellulose with Tacking Agent 3.

E. Tacking Agents:
1. Materials: Polyacrylamide, acrylamide copolymer, hydro-colloid polymers, marker dye.
2. pH Range: 7.0 ±0.2.
3. Surface Tension: 73.9 dynes/cm, based on simulated field application after 5 minutes of mechanical agitation.
4. Viscosity: 102 CPS ±2, Saybolt value, based on 30 pounds per 1,000 gallons of water and 197 CPS ±2, Saybolt value, based on 60 pounds per 1,000 gallons of water, based on simulated field application after 5 minutes of mechanical agitation.
5. University tested to reduce erosion 68.6% and reduce water runoff 21.7% on a 45% slope without having to cure (dry out), effective immediately after hydro-seeding application.
6. Terra-Mulch Tacking Agent 3 by Profile Products LLC.

F. Riprap:
1. Stone for riprap shall consist of field stone or crushed quarry stone of approximately rectangular shape. The stone shall be hard and angular and of such quality that it will not disintegrate on exposure to water or weathering. The specific gravity of the individual stones shall be at least 2.5.
2. Recycled rubble concrete may not be used, unless noted otherwise on the Drawings.
3. The riprap shall be composed of a well-graded mixture such that 50% of the mixture by weight shall be larger than the d50 size as determined from the design procedure. A well-graded mixture as used herein is defined as a mixture composed primarily of the larger stone sizes, but with a sufficient mixture of other sizes to fill the progressively-smaller voids between the stones. The diameter of the largest stone size in such a mixture shall be 1.5 times the d50 size. The d75 should be 1.25 times the d50 and the d15 should be 0.5 times the d50 size.

G. Geotextile Fabric for Riprap:
   1. Synthetic Industries, Terra Tex HD, or equal.
   2. Woven, high strength polypropylene.
   3. Grab Tensile Strength: 315 pounds (min) in accordance with ASTM D4632 (min).
   4. Apparent Opening Size: 40 US sieve (max) in accordance with ASTM D4751 (max).
   5. Water Flow Rate: 4 gpm/sft (min) in accordance with ASTM D4491 (min).

H. Silt Guard:
   1. Above Ground Filters:
      a. Frame and Filter Assembly: Silt Saver, Inc.; or equal.
      b. Nonwoven polypropylene filter with needle punched holes.
      c. High density polyethylene frame.
      d. 60-inch frame, high flow filter.
      e. Filter Material: 120 gpm/sft (min).
      f. Apparent Opening Size (AOS): 40 US Std. Sieve.
      g. Tensile Strength (ASTM D4632): 410/300 (min).
   2. Inlet Protection (Catch Basins):
      a. Siltsak; by ACF Environmental, Inlet Pro Sediment Bag High Flow; by Hanes Geo Components; or equal.
      b. Geotextile fabric silt sump.
      c. Grab tensile strength: 250 to 275 pounds in accordance with ASTM D4632 (min).
      d. Zero gallons per minute per square foot (GPM/SF), water flow rate in accordance with ASTM D4491 (min).
      e. Apparent Opening Size (AOS): 40 US Sieve.
      f. Manufactured to meet size of inlet.

I. Dewatering Filter Bags:
   1. Ultratech International, Inc.: Ultra Dewatering Bag, SedCatch dewatering Bag; or equal.
   2. Manufactured with pump pipe connection sized to match pump hose.
   3. Nonwoven Geotextile, Needle Punched Polypropylene, 8 oz/syd (min).
   4. Grab Tensile: 205 pounds in accordance with ASTM D4632 (min).
   5. Flow Rate: 90 gpm/sft in accordance with ASTM D4491 (min).
   6. Apparent Opening Size (AOS): 80 US Sieve.

J. Geotextile Silt Fence:
   1. Synthetic Industries, Terra TexSF-90.
   2. Woven, high strength polypropylene.
   3. Grab Tensile Strength: 124/101 lbs (min) in accordance with ASTM D4632 (min).
   4. Apparent Opening Size (AOS): 30 US sieve (max) in accordance with ASTM D4751 (max).
   5. Water Flow Rate: 10gpm/sft (min) in accordance with ASTM D4491 (min).
   6. Wood Stakes, Hardwood: 1.5-inch x 1.5-inch x 48-inch (min), 6 foot spacing (max) with 3/8-inch thick lath fastening bar.

K. Check Dams:
   1. Washed Crushed Stone.
   2. Size: 2-inch minimum, 4-inch maximum.

PART 3 - EXECUTION

3.1 GENERAL

A. Standards:
   1. Achieve Effective Erosion Control to prevent erosion of Site slopes and ditches.
   2. Achieve effective control of sedimentation to prevent any offsite discharge or tracking of Site soils.
   3. Maintain soil erosion and sedimentation controls until the Site is stable. Definition of stable site is final concrete and/or asphalt paving is complete, and all turf areas have 80% growth.
   4. Do not remove temporary soil erosion and sedimentation control measures until Site is determined to be stable by the Engineer.
   5. Sweep streets weekly, or more frequently if required, or directed by Engineer.

3.2 DUST CONTROL

A. Prevent blowing and movement of dust from exposed soil surfaces, prevent on Site and off Site damage and health hazards and improve traffic safety:
   1. The following methods should be considered for controlling dust.
      a. Apply water to dry soil
      b. Temporary Vegetative Cover.
      c. Spray-on Adhesives: Keep traffic off these areas.

3.3 CONSTRUCTION ENTRANCE DRIVE

A. Employ water truck and street sweeper as necessary to keep sediment off of on Site and off Site roadways. The entrance must be maintained in a condition which will prevent tracking or flowing of sediment onto roadways. This may require periodic top dressing with additional stone or additional length as conditions demand and repair and/or cleanout of any measures used to trap sediment. All sediment spilled, dropped, washed, or tracked onto roadways (public or private) or other impervious surfaces must be removed immediately.

B. Where accumulation of sediment is inadequately cleaned or removed by conventional methods, a power broom or street sweeper will be required to clean paved or impervious surfaces. All other access points which are not stabilized must be blocked off.

3.4 INLET PROTECTION

A. Install on existing inlets prior to any grading or excavation. Install on new inlets as soon after installation as practical.

B. Inspect frequently, especially after any rain event. Maintain repair, and replace promptly, as needed.

C. Remove barrier only when the area draining toward the inlet has been stabilized.

3.5 SOIL ROUGHENING

A. On all slopes 1:3 or steeper, grade the slope with a dozer taking a vertical path so that the track marks on the slope create a horizontal roughened grooved condition to help prevent erosion of the slope.

3.6 TEMPORARY VEGETATIVE COVER

A. General:
   1. Provide temporary seed if permanent measures will not be placed within 15 days of initial disturbance and area will not undergo further earth change within 15 days of initial disturbance.
   2. Seed: Apply uniformly at a minimum rate of 3 to 5 pounds per 1,000 square feet.
   3. Mulch:
      a. Mulching is required on all seeding. Mulch will protect against erosion before grass is established and will promote faster and earlier establishment. The existence of vegetation sufficient to control soil erosion must be deemed compliance with this mulching requirement.
      b. Straw: Unrotted small grain straw, free of seeds
      c. Application: Spread mulch uniformly by hand or mechanically so that at least 85% of the soil surface is covered. For uniform distribution of hand-spread mulch 75 to 100 pounds per 1,000 square feet. Anchoring must be accomplished immediately after placement to minimize loss by wind or water. This may be done by one of the following methods, depending upon the size of the area, steepness of slopes.
         1) Peg and Twine. Drive 8 to 10 inch wooden pegs to within 2 to 3 inches of the soil surface every 4 feet in all directions. Stakes may be driven before or after applying mulch. Secure mulch to soil surface by stretching twine between pegs in a crisscross and a square pattern. Secure twine around each peg with two or more round turns.
         2) Mulch Nettings: Staple paper, jute, cotton, or plastic nettings to the soil surface. Use a degradable netting in areas to be mowed.

3) Crimper (mulch anchoring coulter tool): A tractor-drawn implement, somewhat like a disc harrow, especially designed to push or cut some of the broadcast long fiber mulch 3 to 4 inches into the soil so as to anchor it and leave part standing upright. Straw mulch rate must be 3 tons per acre. No tackifying or adhesive agent is required.
4) Liquid Mulch-Binders (May be used to anchor straw mulch):
   a) Applications should be heavier at edges where wind may catch the mulch, in valleys, and at crests of banks. The remainder of the area should be uniform in appearance.
   b) Organic and Vegetable Based Binders: Naturally occurring, powder-based, hydrophilic materials when mixed with water formulates a gel and when applied to mulch under satisfactory curing conditions will form membraned networks of insoluble polymers. The vegetable gel must be physiologically harmless and not result in a phytotoxic effect or impede growth of turf grass. Use at rates and weather conditions as recommended by the manufacturer to anchor mulch materials.
   c) Synthetic Binders: High polymer synthetic emulsion, miscible with water when diluted and, following application of mulch, drying and curing, shall no longer be soluble or dispersible in water. Binder must be applied at rates recommended by the manufacturer and remain tacky until germination of grass.
   d) Wood-fiber or paper-fiber mulch: must be made from wood, plant fibers or paper containing no growth or germination inhibiting materials, used at the rate of 1,500 pounds per acre (or as recommended by the product manufacturer) and may be applied by a hydroseeder. Mulch must not be mixed in the tank with seed. Use on flatter slopes and during optimum seeding periods in spring and fall.

3.7 PERMANENT VEGETATIVE COVER

A. General:
   1. Seed all disturbed areas within 5 days of final grading.
   2. Apply uniformly at a minimum rate of 3 to 5 pounds per 1,000 square feet.
   3. Mulch as indicated on the Drawings or as needed to effectively control soil erosion.

3.8 MULCH BLANKET

A. Direction of installation, staple patterns and other requirements in accordance with Manufacturer's directions, and Project Drawing detail sheets.

B. Location: Where indicated on the Drawings or as specified.

3.9 HYDRO MULCH

A. Apply in accordance with manufacturer, Application Rate: 2,000 pounds per acre.

3.10 TACKING AGENTS

A. Fiber Mulch Binding:
   1. Flat to 5:1 Slope: 20 pounds per acre.
      a. 4:1 to 3:1 Slope: 30 pounds per acre.
      b. 3:1 to 2:1 Slope: 40 pounds per acre.
      c. Greater than 2:1 Slope: 60 pounds per acre.
   2. Straw Mulch Binding: 30 pounds Tacking Agent III and 150 pounds cellulose fiber per 1,000 gallons of water per acre, or 50 pounds Tacking Agent III per 1,000 gallons of water per acre.

3.11 GEOTEXTILE SILT FENCE

A. Space posts 6 feet center-to-center or closer. Extend at least -12 inches into the ground. Posts shall be constructed of hardwood with a minimum diameter thickness of 1-1/2 inches.

B. Wire Backed silt fence: A metal fence with 6 inch or smaller wire mesh openings and at least 2 feet high may be utilized, fastened to the fence posts, to provide reinforcement and support to the geotextile fabric. Place posts 6 feet on center.

C. Bury geotextile fabric at least 6 inches deep in the ground. Extend The fabric at least 2 feet above the ground, unless noted otherwise. The fabric must be securely fastened to the posts using a system consisting of metal fasteners (nails or staples) and a high strength reinforcement material (nylon webbing, grommets, washers, etc.) placed between the fastener and the geotextile fabric. The fastening system must resist tearing away from the post. Install silt fence in accordance with manufacturer's instructions, and Project Drawing detail sheets.

D. Location: Where indicated on the Drawings or as needed to prevent offsite movement of soil.

3.12 FIBER ROLLS

A. Vertical spacing on slopes:
   1. As indicated on the Drawings, or
   2. 1:1 slopes: 10 feet apart.
   3. 2:1 slopes: 20 feet apart.
   4. 3:1 slopes: 30 feet apart.

3.13 RIPRAP

A. Place no bends or curves at the intersection of the conduit and apron or scour hole will be permitted.

B. There must be no over fall from the end of the apron to the receiving channel.

3.14 DEWATERING

A. If during construction excavated facilities need to be dewatered to facilitate or complete the construction process and the water pumped out of the excavated areas contain sediments, these sediments must be removed prior to discharging to receiving bodies of water. This standard does not address the removal of ground water through well points etc.

B. Pumping system must include adequate sized perforated riser pipes, stone filters and sediment pumping bags to achieve desired results. Place the suction hose from the pump inside the inner pipe to begin dewatering. Place the discharge hose in a stabilized area downslope of unstabilized areas to prevent erosion.

C. Sediment Tank / Silt Control Bags may be used when sediment laden water is pumped to trap and retain the sediment. A sediment tank or a silt control bag is to be used when excavations are deep, and space is limited and where direct discharge of sediment laden water to stream and storm drainage systems is to be avoided.
   1. Locate containers (tanks or bags) for ease of clean-out and disposal of the trapped sediment and to minimize interference with construction activities and pedestrian traffic. Do not place bags directly into receiving waters.
   2. Tank size: The following formula should be used in determining the storage volume of the tank: 1 cubic foot of storage for each gallon per minute of pump discharge capacity. Typical tank configuration is indicated on Standard Detail. Tanks may be connected in series to increase effectiveness.

3.15 SEDIMENT BASIN

A. Size and location as indicated on the Drawings. Sediment basins, not indicated on the Drawings but required due to Contractor's means, methods or convenience, will be considered incidental work.

B. Maintenance:
   1. Remove sediment when sediment from runoff gets to be an average of 10” deep.
   2. Remove all sediment prior to final completion.
   3. Remove outlet barrier stone filter when stone becomes clogged or ineffective.

3.16 BUILDING PROJECT CONSTRUCTION

A. During construction conform to the following general rules:
   1. Minimize the amount of earth disturbed at any one time.
   2. Establish a construction sequence which includes adequate erosion control.

3. As much as practical, direct stormwater away from the construction area. Direct diverted stormwater to a stable on-Site area.
4. Collect runoff from the Site in sediment basins, traps or through filters.
5. Establish an inspection and maintenance schedule, paying special attention to the beginning of the various stages of construction.

3.17 AIRBORNE SEDIMENT

A. Dust Control:
1. Use legal means necessary to control dust on and near the Work and on and near off Site borrow areas if such dust is caused by Contractor's operations during performance of the Work or if resulting from the condition of the Site when earthwork operations are suspended.
2. Treat haul roads, delivery roads, temporary Site access roads and other surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other work on the Site, and as directed by Engineer.
3. Periodically scrape and broom adjacent streets and paved areas to remove tracked dirt.

B. Wind Erosion:
1. Erect and maintain barriers to prevent migration of windblown sediment offsite.
2. Conduct operations in such a manner as to minimize the amount of Site area exposed to wind erosion.
3. Be responsible for removal of windblown sediments deposited off Site, including costs for cleaning or repairs required due to sediment deposition and removal.

END OF SECTION 31 25 00

SECTION 32 11 23 – AGGREGATE BASE COURSES

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes furnishing and installation of the major items listed below:
   1. Base course.
   2. Subbase.

1.2 REFERENCES

A. Except as herein specified or as indicated on the Drawings, the Work of this Section shall comply with the following:
   1. ASTM Standard Test Methods:
      a. D1556 - Density and Unit Weight of Soil In Place by the Sand-Cone Method.
      b. D1557 - Laboratory Compaction Characteristics of Soil Using Modified Effort.
      c. D2922 - Density of Soil and Soil-Aggregate In Place by Nuclear Methods.
   2. State DOT Current Standards: Specifications for Construction.

1.3 DEFINITIONS

A. Terms:
   1. Base Course: The layer of specified material of designed thickness placed on a subbase or a subgrade to support a surface course.
   2. Pavement Structure: Combination of subbase, base course, and surface course, including shoulders, placed on a subgrade.
   3. Plan Grade: Vertical control grade indicated on the Drawings.
   4. Roadbed: The portion of the roadway between the outside edges of finished shoulders, or the outside edges of berms back of curbs or gutters, when constructed.
   5. Roadside: The portion of the right-of-way outside of the roadway.
   6. Roadway: The portion of the right-of-way required for construction, limited by the outside edges of slopes and including ditches, channels, and all structures pertaining to the Work.
   7. Shoulder: The portion of the roadway contiguous with the traveled way for accommodation of stopped vehicles, for emergency use, and for lateral support of base and surface courses.
   8. Subbase: The layer of specified material of designed thickness placed on the subgrade as a part of the pavement structure.
   9. Subgrade: The portion of the earth grade upon which the pavement is to be placed.

1.4 SUBMITTALS

A. Action Submittals: For aggregate:
   1. Source.
   2. MDOT classification.
   3. Sieve analysis.

1.5 QUALITY ASSURANCE

A. Testing of Aggregate Materials: In accordance with Division 01 Section “Testing Services for Buried Utilities, Roadways, and Site Projects.”

B. Compaction:
   1. Determine density by the modified Proctor method, ASTM D1557.
   2. Compact subbase and base course to at least 95% maximum density at a moisture content not greater than optimum.

1.6 PROJECT CONDITIONS

A. Dust Control:
   1. Use all legal means necessary to control dust on and near the Work and on and near off-site borrow areas if such dust is caused by Contractor's operations during performance of the Work or if resulting from the condition of the Site when earthwork operations are suspended.
   2. Moisten or otherwise treat haul roads, delivery roads, temporary Site access roads and other surfaces as required to prevent dust from being a nuisance to the public, neighbors, and concurrent performance of other work on the Site.

B. Existing Utility Structures:
   1. Where utility structures are encountered which are in active use:
      a. Provide adequate protection.
      b. Be responsible for damage.
   2. Adjust utility structures to meet plan grade.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:
   1. Approval Required: Material shall be subject to the approval of Engineer and independent testing laboratory.
   2. Notification: For approval of materials, notify Engineer and independent testing laboratory at least 1 week in advance of intention to import material, designate the proposed stockpile area, and permit Engineer and/or independent testing laboratory to sample as necessary from the stockpile area for the purpose of making acceptance tests to prove the quality of the material.

B. Subgrade: In accordance with Division 31 Section “Grading.”

C. Material Source: Imported Material:
   1. Subbase.
   2. Base course.

D. Subbase: MDOT 902, Grandular Material Class II.

E. Aggregate Base Course: MDOT 902, Dense Graded Aggregate 21AA Modified.

MDOT 21AA-Mod.	1 1/2"	1"	1/2"	No. 8	No. 30	LBW
	100	85 - 100	50 - 70	20 - 35	8 - 22	0 - 7

Physical Requirements

Crushed material, Min.	95%
Loss, % Max., Los Angeles Abrasion (MTM 102)	40%

PART 3 - EXECUTION

3.1 PREPARATION

A. Subgrade:
   1. Prepared in accordance with Division 31 Section “Grading.”
   2. Maintain in a smooth and compacted condition until the subbase or base course has been placed.
   3. Proof roll subgrade prior to placing subbase or base course.
   4. No base course shall be placed on the subgrade until it has been approved by Engineer.

3.2 INSTALLATION

A. Subbase:
1. Smooth, spread and compact.
2. Place in one layer, provided that the depth of the compacted layer does not exceed 15 inches.
3. Where the specified depth of subbase is more than 15 inches, place material in layers of approximately equal thickness.
4. Construct to the grade and cross section as indicated on the Drawings.
5. Should the subgrade at any time prior to or during the placing of subbase become soft or unstable to the extent that rutting occurs in the subgrade or to the extent that subgrade material is forced up into the subbase materials, the operation of hauling and placing subbase shall be immediately discontinued. Where subgrade material has become mixed with the subbase material, the mixed material shall be removed and disposed of. After the subgrade has been corrected to the specified condition, new subbase material shall be placed and compacted as specified above.
6. Shape to specified crown and grade within a tolerance of plus 1-inch and maintain in smooth condition.
7. Do not place on a frozen, soft, unstable or rutted subgrade.
8. Remove, dispose of and replace subbase material, at Contractor's expense, if it becomes mixed with subgrade material.
9. Proof roll subbase prior to installation of base course.

B. Base Course:
1. Do not place aggregate base on frozen, soft, unstable or rutted subgrade, subbase, or aggregate base.
2. Additives may be used to ease compaction, shaping, and maintenance of the aggregate surface.
3. Do not rut or distort the subbase material or aggregate base during spreading.
4. Place in uniform layers to such a depth that when compacted, the course will have the thickness indicated on the Drawings.
5. The compacted depth of each layer shall not be more than 6 inches nor less than 3 inches.
6. Compact each layer of aggregate.
7. Place aggregate shoulder material in conjunction with the top layer of aggregate base material.
8. Shape to the crown and grade within a tolerance of ± 0.05 feet unless otherwise specified. The surface of each spreading operation shall be continuously maintained in a smooth condition.
9. Roll the shaped surface, when required, to provide thorough compaction.
10. Where the existing surface is very irregular, the use of a scarifier may be required. Wetting may be required to facilitate shaping the surface and to assist in providing compaction.
11. Remove, dispose of and replace aggregate base material, at the Contractor's expense, if it becomes mixed with the subbase or subgrade material.
12. Final shaping and compacting shall be accomplished by use of a subgrade machine operating on crawler tracks, or by the use of a maintainer or surface planer, with a rigid frame.
13. If the subgrade, subbase, or aggregate base is damaged due to the Contractor's operations or by traffic, restore to the specified condition at Contractor's expense.

END OF SECTION 32 11 23

SECTION 32 92 00 - TURF AND GRASSES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Turf Seeding
   2. Slope Stabilization native forbs and grasses seeding.
   3. Low Profile Prairie native forbs and grasses seeding.
   4. Storm water Basin native forbs and grasses seeding.
   5. Fertilizer and mulch.
   6. Topsoil.

1.2 DEFINITIONS

A. Finish Grade: Elevation of finished surface of planting soil.

B. Manufactured Soil: Soil produced off-site by homogeneously blending mineral soils or sand with stabilized organic soil amendments to produce topsoil or planting soil.

C. Planting Soil: Native or imported topsoil, manufactured topsoil, or surface soil modified to become topsoil; mixed with soil amendments.

D. Subgrade: Surface or elevation of subsoil remaining after completing excavation, or top surface of a fill or backfill immediately beneath planting soil.

E. Subsoil: All soil beneath the topsoil layer of the soil profile, and typified by the lack of organic matter and soil organisms.

1.3 SUBMITTALS

A. Product Data: For each type of product indicated.
   1. Pesticides and Herbicides: Include product label and manufacturer’s application instructions specific to this Project.

B. All submittals must be received 30 days prior to installation.

C. Soil test including physical properties.

D. Chemicals and fertilizers to be used (including MSDS).

E. Top soil analysis.

F. Certification of Seed: From seed vendor for each seed monostand or mixture stating the botanical and common name and percentage by weight of each species and variety, and percentage of purity, germination, and weed seed. Include the year of production and date of packaging.
   1. Mix labels: For certified seed mixes.

G. Material Test Reports: For existing surface soil and imported topsoil.

H. Qualification Data: For qualified landscape Installer.

I. Qualification Data: For qualified seed vendor.

1.4 QUALITY ASSURANCE

A. Native forbs and grasses Installer Qualifications: A qualified landscape Installer whose work has resulted in a minimum of 10 years successful native turf and stormwater basin establishment, ecological restoration, and projects of this scale.
   1. Installer's Field Supervision: Require Installer to maintain an experienced full-time supervisor on Project site when work is in progress.
   2. Installer must provide a list of recent native seeding project references with bid.
   3. Installer must be knowledgeable in plant identification both of seeded native species as well as weed species.
   4. Installer must provide list of plant and seed sources within 10 days of award.
   5. Installer must possess license for pesticide/herbicide application with public right-of-ways, aquatic applications and restoration.
   6. Acceptable Installers:
      a. Wildtype Native Plant Nursery, Inc., 900 N Every Rd, Mason, MI 48854, 517.244.1140.
      b. Native Connections, Inc., 17080 Hoshel Rd, Three Rivers, MI 49093, 269.273.1367.
      c. Michigan Wildflower Farm, 11770 Cutler Rd, Portland, MI 48875, 517.647.6010.
      d. Cardno, Inc., 11181 Marwill Avenue, West Olive, MI 49460, 616.847.1680.

B. Soil-Testing Laboratory Qualifications: An independent laboratory, recognized by the State Department of Agriculture, with the experience and capability to conduct the testing indicated and that specializes in types of tests to be performed.

C. Topsoil Analysis: Furnish soil analysis by a qualified soil-testing laboratory stating percentages of organic matter; gradation of sand, silt, and clay content; cation exchange capacity; sodium absorption ratio; deleterious material; pH; and mineral and plant-nutrient content of topsoil.
   1. Report suitability of topsoil for lawn growth. State-recommended quantities of nitrogen, phosphorus, and potash nutrients and soil amendments to be added to produce satisfactory topsoil.

D. Preinstallation Conference: Conduct conference at Project site.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Seed: Deliver seed in original sealed, labeled, and undamaged containers.

B. Bulk Materials:
   1. Do not dump or store bulk materials near structures, utilities, walkways, and pavements, or on existing turf areas or plants.
   2. Provide erosion-control measures to prevent erosion or displacement of bulk materials, discharge of soil-bearing water run-off, and airborne dust reaching adjacent properties, water conveyance systems, or walkways.
   3. Accompany each delivery of bulk fertilizers and soil amendments with appropriate certificates.

C. Ensure that the cell packs and plugs of native plant cover are delivered moist and in good condition for planting. Review plants after delivery with the Landscape Architect and Owner.

1.6 PROJECT CONDITIONS

A. Planting Restrictions: Plant during one of the following periods. Coordinate planting periods with initial maintenance periods to provide required maintenance from date of Substantial Completion.
   1. Spring Planting: May 15th to June 30th.
   2. Fall Planting: September 1st to October 31st.
   3. Native Seed Frost Planting: November 1st to December 31st.

B. Weather Limitations: Proceed with planting only when existing and forecasted weather conditions permit.

1.7 MAINTENANCE SERVICE

A. Initial Seeded Area Maintenance Service: Provide full maintenance by skilled employees of landscape Installer. Maintain as required in Part 3. Begin maintenance immediately after each area is planted and continue until acceptable coverage is established, but for not less than the following periods:
   1. Seeded Lawns: 90 days from date of Substantial Completion.
      a. When initial maintenance period has not elapsed before end of planting season, or if lawn is not fully established, continue maintenance during next planting season.

B. Maintain and establish lawn by watering, fertilizing, weeding, mowing, trimming, replanting, and other operations. Roll, regrade, and replant bare or eroded areas and remulch to produce a uniformly smooth lawn.
   1. In areas where mulch has been disturbed by wind or maintenance operations, add new mulch. Anchor as required to prevent displacement.

C. Watering: Provide and maintain temporary piping, hoses, and lawn-watering equipment as required to convey water from sources and to keep lawn uniformly moist to a depth of 4 inches.
   1. Schedule watering to prevent wilting, puddling, erosion, and displacement of seed or mulch. Lay out temporary watering system to avoid walking over muddy or newly planted areas.
   2. Water lawn at a minimum rate of 1 inch per week.

D. Mow lawn as soon as top growth is tall enough to cut. Repeat mowing to maintain specified height without cutting more than 40 percent of grass height. Remove no more than 40 percent of grass-leaf growth in initial or subsequent mowings. Do not delay mowing until grass blades bend over and become matted. Do not mow when grass is wet.

E. Schedule initial and subsequent mowings to maintain the following grass height:
   1. Mow Stormwater and Swale Seed Mix:
      a. First Year: Mow to 6-inch height when it has grown to a 12-inch height.
      b. Second Year: Mow to 8-inch height when it has grown to a 12-inch to 18-inch height.
   2. Mow Low Profile Prairie and Slope Stabilization Seed Mix:
      a. First Year: Mow to 4-inch to 6-inch height when it has grown to a 10-inch to 12-inch height.
      b. Second Year: Mow to 8-inch height when it has grown to a 12-inch to 18-inch height.
   3. Mow turf grass to a 2.5-inch to 3-inch height when it has grown to a 4-inch height.

F. Lawn Post fertilization: Apply fertilizer after initial mowing and when grass is dry.
   1. A phosphorous free fertilizer that will provide actual nitrogen of at least 1 lb/1000 sq. ft. to lawn area.

1.8 GUARANTEE FOR NATIVE FORBS AND GRASS SEEDED AREAS

A. A real coverage of the seeded areas will be at least 50% by time of 1 year warranty review after Substantial Completion.

B. No more than 10% (by real cover) of the seeded area will be dominated by perennial weedy species.

C. If these standards are not met, the Contractor will be responsible for supplemental seedings as approved by the Architect.

PART 2 - PRODUCTS

2.1 TURF SEED

A. Grass Seed: Fresh, clean, dry, new-crop seed complying with AOSA's "Journal of Seed Technology; Rules for Testing Seeds" for purity and germination tolerances.

B. Fresh, clean, and new crop seed mixture. Each seed type certified blue or gold tag.
   1. Mixed by an approved method.
   2. Test for germination made within preceding six months. Not to exceed 0.25% weed seed. Seeding rates shall be determined by the percent pure live seed, where PLS = % pure seed x % germination x 100.
   3. Turfgrasses:
      a. **Standard Turf Seed Mix:**
         1) Earth Carpet "Survivor Lawn Mixture" as provided by Michigan State Seed Solutions, www.seedsolution.com, or approved substitute.
            a) 15% Kentucky Bluegrass.
            b) 30% Creeping Red Fescues.
            c) 40% Tall Fescue
            d) 15% Perennial Ryegrass.
            e) Perennial Ryegrass and Tall Fescues varieties must meet the minimum rating of 6.0 or higher for a seed tested at a Michigan location on the National Turfgrass Evaluation Program (NTEP) National Test.
   4. Obtain the Owner's specific written acceptance for substitution of seed other than those named above. Proposed substitutes shall have essentially the same characteristics as seed specified in appearance, ultimate height, shape, habit of growth, general soil, and other requirements. Average cost and value of seed specified. Seed of greater value may be accepted without additional cost to the Owner.

2.2 ACCEPTABLE SEED SPECIES

A. The seed species that shall be used shall be obtained from one of the licensed nursery or seed companies listed below that normally handles or has experience handling native seeds, or approved substitute:
   1. Native Connections, 17080 Hoshel Road, Three Rivers, MI 49093, 269.580.4765. http://www.nativeconnections.net
   2. Michigan Wildflower Farms, 11770 Cutler Road, Portland, MI 48875, 517.647.6010. http://www.michiganwildflowerfarm.com/
   3. Wildtype Native Plant Nursery, Ltd., 900 North Every Road, Mason, MI 48854, 517.244.1140. http://www.wildtypeplants.com/
   4. Cardno, Inc., 11181 Marwill Avenue, West Olive, MI 49460, 616.847.1680 https://www.cardnonativeplantnursery.com

B. All seed shall be from Michigan seed stock, preferably obtained from local sources within 100 miles of the project site if possible. All species shall be true to species.

C. Substitutions: Submit list of growers for each plant species to be installed within 15 days following award of contract. Include substitution requests based on plant non-availability.
   1. Substitution requests after this period will not be accepted.

2.3 HYDROMULCH

A. Hydromulch slurry mixture is to be composed of a suitable rate of mulch and water to allow for even coverage of seed that will protect plant growth while allowing necessary light and water to penetrate.

2.4 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Fiber Mulch: Biodegradeable, dyed wood, cellulose-fiber mulch; non-toxic and free of plant growth or germination inhibitors; with a maximum moisture content of 15% and a Ph range of 4.5 to 6.5.

C. Nonasphaltic Tackifier: Colloidal tackifer recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant growth or germination inhibitors.

2.5 WATER

A. Free of substance harmful to plant growth.

2.6 TOPSOIL, SOIL MIXES, SOIL AMENITIES

A. Topsoil: ASTM D 5268, pH range of 5.5 to 7, 4 percent organic material minimum, free of stones 3/8 inch or larger in any dimension, and other extraneous materials harmful to plant growth. Soil shall be a loam or sandy loam texture and free of debris.
   1. Topsoil Source: Import topsoil from offsite sources as necessary. Obtain topsoil from naturally well-drained sites naturally well-drained construction or mining sites where topsoil occurs at least 4 inches deep; do not obtain from agricultural land, bogs or marshes.

B. Lime: ASTM C 602, Class T, agricultural limestone.

2.7 PLANTING SOIL MIX

A. Planting Soil Mix: Mix topsoil with the following soil amendments in the following quantities:
   1. Ratio of Loose Compost to Topsoil by Volume: 1:3.

2.8 PLANTING ACCESSORIES

A. Selective Herbicides: EPA registered and approved, of type recommended by manufacturer for application.
   1. Pre-Emergent Herbicide (Selective and Non-Selective): Effective for controlling the germination or growth of weeds within planted areas at the soil level directly below the mulch layer.
   2. Post-Emergent Herbicide (Selective and Non-Selective): Effective for controlling weed growth that has already germinated.
      a. Surfactant-loaded liquid formulation for post-emergent weed control; active ingredient: Glyphosate Isopropylamine Salt.

2.9 FERTILIZER

A. Commercial Fertilizer: Commercial-grade complete fertilizer for turf seed establishment shall be a starter fertilizer with a ratio of 1:2:1 for NPK.

2.10 MULCHES

A. Straw Mulch: Provide air-dry, clean, mildew- and seed-free, salt hay or threshed straw of wheat, rye, oats, or barley.

B. Fiber Mulch: Biodegradable, dyed-wood, cellulose-fiber mulch; nontoxic; free of plant-growth or germination inhibitors; with a maximum moisture content of 15% and a pH range of 4.5 to 6.5.

C. Nonasphaltic Tackifier: Colloidal tackifier recommended by fiber-mulch manufacturer for slurry application; nontoxic and free of plant-growth or germination inhibitors.

2.11 EROSION-CONTROL MATERIALS

A. Erosion-Control Blankets: Biodegradable wood excelsior, straw, or coconut-fiber mat enclosed in a photodegradable plastic mesh. Include manufacturer's recommended steel wire staples, 6 inches long.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine areas to receive lawns and grass for compliance with requirements and other conditions affecting performance.
   1. Verify that no foreign or deleterious material or liquid such as paint, paint washout, concrete slurry, concrete layers or chunks, cement, plaster, oils, gasoline, diesel fuel, paint thinner, turpentine, tar, roofing compound, or acid has been deposited in soil within a planting area.
   2. Do not mix or place soils and soil amendments in frozen, wet or muddy conditions.
   3. Suspend soil spreading, grading and tilling operations during periods of excessive soil moisture until the moisture content reaches acceptable levels to attain the required results.
   4. Uniformly moisten excessively dry soil that is not workable and which is too dusty.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

C. If contamination by foreign or deleterious material or liquid is present in soil within a planting area, remove the soil and contamination as directed by Architect and replace with new planting soil.

3.2 PREPARATION

A. Protect structures, utilities, sidewalks, pavements, and other facilities, trees, shrubs, and plantings from damage caused by planting operations.
   1. Protect adjacent and adjoining areas from hydroseeding overspray.
   2. Protect grade stakes set by others until directed to remove them.

B. Provide erosion-control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.

C. Verify limits of seeding material with the Owner’s Representative in the field before starting seeding and sodding work.

D. Limit preparation to areas which will be immediately seeded.

E. Newly Graded Subgrades: Loosen subgrade to a minimum depth of 4 inches. Remove stones larger than 1 inch in any dimension and sticks, roots, rubbish, and other extraneous matter and legally dispose of them off Owner's property.

F. Spread topsoil to a depth of 4 inches minimum - except to a depth of 6 inches on berms of contaminated soil - to meet finish grades after light rolling and natural settlement. Do not spread if planting soil or subgrade is frozen, muddy, or excessively wet.

G. Fine grade to a smooth even surface with no ‘bird baths’, having loose, uniformly fine texture. Remove trash, debris, stones larger than 1-inches in any dimension, and other objects that may interfere with planting or maintenance operations.

H. Fine grade to within plus or minus 1/2 inch of finish elevation. Roll and rake, remove ridges, and fill depressions to meet finish grades. Limit fine grading to areas that can be planted in the immediate future.

I. Apply herbicides per manufacturer’s written instructions. Delay seeding per manufacturer’s written instructions.

J. Apply fertilizers by mechanical rotary or drop type distributor thoroughly and evenly incorporated with soil. Fertilize areas inaccessible to power equipment with hand tools and incorporate into soil.

K. Restore prepared areas to specified condition of eroded, settled, or otherwise disturbed after fine grading and prior to seeding and sodding.

L. Moisten prepared lawn areas before planting when soil is dry and allow surface to dry before planting.

3.3 HERBICIDES ON SEEDED AREAS

A. Apply 2 applications of herbicide to all soils to receive new perennial plants at least 1 month prior to plant installation. Applications to be applied at least 2 weeks apart with at least 2 weeks between last application and plant installation.
   1. Herbicide: Round-up® or approved substitute.
   2. Application rate and quantity: Per manufacturer's written instructions for complete weed kill-off.

B. Once both herbicide applications have occurred, do not turn up any more new soil, as this brings new weed seeds to the surface. Roll prior to seeding to firm the seedbed. Do not work soil further, but seed directly.

3.4 DRILL SEEDING/HYDROMULCHING TURF SEED

A. Turf seed mix shall be mechanically seeded with a "Brillion" or equivalent seeding machine. Do not broadcast or drop seed. Evenly distribute seed by sowing equal quantities in two directions at right angles to each other.
   1. Do not use wet seed or seed that is moldy or otherwise damaged.
   2. Seed at the following minimum rates: Apply at 8 lbs per 1,000 square feet of pure live seed.
   3. Apply Commercial Fertilizer 1/2/1 at 200 lbs./acre.

3.5 SEEDING PRAIRIE, SLOPES, AND STORMWATER BASIN

A. Prairie and stormwater seed mixes shall be seeded with a native no-till seed drill or a culti-packer native seeder. Evenly distribute seed by seeding in multiple directions at right angles to each other.
   1. Sow seed at the rates as recommended by the manufacturer.
   2. Do not use wet seed or seed that is moldy or otherwise damaged.
   3. Mix clean, dry sand (or other inert filler) as a carrier for seed at a ratio of 1 part sand and 1 part seed.
   4. Criss-cross the seedbed several times to spread the seeds evenly.
   5. Bare, erosive soil should be lightly mulched with oat straw so that 50% of the soil still shows. Roll with lawn roller or tamp small area with rake or foot so seed will make good contact with the soil.

3.6 SEEDING PRAIRIE, SLOPE, AND STORMWATER BASIN MIXES

A. Seed application shall be as installed as stated in above paragraphs.

B. Seed shall not be covered with more than 1/4 inch of soil.

C. In places inaccessible to mechanical equipment, or where the area to be seeded is small, a hand operated cyclone seeder or other approved equipment may be used.

D. The seeding equipment shall be calibrated to sow the seeds at the rates and proportions as specified in the plans.

E. No fertilizers or soil conditioners will be required or allowed.

3.7 MULCHING

A. Hydromulch seeded areas within 24 hours after seeding.

B. Replace mulch displaced before grass has made a growth of 1-inch to 1-1/2-inch.

C. Provide straw bale checking in ditches or problem swales at intervals required to adequately slow water velocity and impede soil loss or other methods as required by governmental agencies.

D. During germination period, the Contractor shall protect and water seeded areas, maintain top 1/2-inch to 1-inch soil in a moist condition. Continue watering until turfgrass is established.

3.8 PREPARATION FOR EROSION-CONTROL MATERIALS

A. Prepare area as specified in "Lawn Preparation" Article.

B. For erosion-control blanket, install from top of slope, working downward, and as recommended by material manufacturer for site conditions. Fasten as recommended by material manufacturer.

C. Moisten prepared area before planting if surface is dry. Water thoroughly and allow surface to dry before planting. Do not create muddy soil.

3.9 SATISFACTORY TURF

A. Lawn installations shall meet the following criteria as determined by Architect:
   1. Satisfactory Seeded Turf: At end of maintenance period, a healthy, uniform, close stand of grass has been established, free of weeds and surface irregularities, with coverage exceeding 90% over any 10 sq. ft. and bare spots not exceeding 5 by 5 inches.

B. Use specified materials to reestablish lawns that do not comply with requirements and continue maintenance until lawns are satisfactory.

3.10 SATISFACTORY PRAIRIE, SLOPE, AND STORMWATER BASIN SEEDING

A. Real coverage of the seeded areas will be at least 50% by time of 1 year warranty review after Substantial Completion.

B. No more than 10% (by real cover) of the seeded area will be dominated by perennial weedy species.

C. If these standards are not met, the Contractor will be responsible for supplemental seedings as approved by the Architect.

D. Inspection and Acceptance of native areas.
   1. Reseeding: Parts of the seeded area that fail to show uniform development as determined by the Architect shall be reseeded and such reseeding shall continue until the Contractor produces a uniform stand of permanent native plants.
   2. Damage to seeded areas resulting from erosion or the Contractor’s operations shall be repaired by the Contractor until the native area is accepted.
   3. Final inspection of native area will be made at the conclusion of the maintenance period. Written notice requesting inspection shall be submitted to the Architect at least 10 days prior to the anticipated inspection date.

3.11 CLEANUP AND PROTECTION

A. Any soil, peat or similar material which has been brought onto paved areas by hauling operations or otherwise shall be removed promptly. Upon completion of planting, all excess soil, stones, and debris shall be removed from the site or disposed of as directed by the Owner. All planting areas shall be prepared for final inspection.

B. Promptly remove soil and debris, created by lawn work, from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

C. Erect temporary fencing or barricades and warning signs as required to protect newly planted areas from traffic. Maintain fencing and barricades throughout initial maintenance period and remove after lawn is established.

D. Remove nondegradable erosion-control measures after grass establishment period.

3.12 ACCEPTANCE

A. Inspection to determine acceptance of installed turfgrass will be made by Landscape Architect.
   1. New turfgrass areas will be acceptable provided all requirements, excluding maintenance, have been compiled with.
   2. No individual turfgrass area shall have bare spots or unacceptable cover totaling more than 2% of the individual areas requested to be inspected.

B. Planted areas will be inspected at completion of installation and accepted subject to compliance with specified materials and installation requirements.

3.13 CLEANUP AND PROTECTION

A. Promptly remove soil and debris created by lawn work from paved areas. Clean wheels of vehicles before leaving site to avoid tracking soil onto roads, walks, or other paved areas.

B. Erect barricades and warning signs as required to protect newly planted areas from traffic. Maintain barricades throughout maintenance period and remove after lawn is established.

END OF SECTION 32 92 00

AUTHORIZING RESOLUTION

WHEREAS, the Michigan Strategic Fund has invited Units of General Local Government to apply for its Water-Related Infrastructure (WRI) Competitive Funding Round; and

WHEREAS, the City of Mt. Pleasant desires to request $2,500,000 in CDBG funds to implement improvements to the existing wastewater treatment plant, including but not limited to sludge drying beds and sludge holding tank; and

WHEREAS, the City of Mt. Pleasant commits local funds from its Water Resource Recovery Facility Reserve in the amount of $275,000; and

WHEREAS, the proposed project is consistent with the local Community Development Plan as described in the Application; and

WHEREAS, the proposed project will benefit all residents of the project area and fifty-eight percent of the residents of the City of Mt. Pleasant are low- and moderate-income persons as determined by census data provided by the U.S. Department of Housing and Urban Development; and

WHEREAS, local funds and any other funds to be invested in the project have not been obligated/incurred and will not be obligated/incurred prior to a formal grant award, completion of the environmental review procedures and a formal written authorization to obligate/incur costs from the Michigan Economic Development Corporation.

NOW, THEREFORE, BE IT RESOLVED that the City of Mt. Pleasant hereby designates the City Manager as the Environmental Review Certifying Officer, the person authorized to certify the Michigan CDBG Application, the person authorized to sign the Grant Agreement and payment requests, and the person authorized to execute any additional documents required to carry out and complete the grant.

Mt. Pleasant

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Capital Improvement Plan
2026-2031

Presentation Overview

- 2025 Projects
- 2026 Projects by Department
- Changes From Prior Plan
- Summary of 2027-2031 Projects
- Remaining CIP Steps

www.mt-pleasant.org/CIP

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Characteristics of CIP Project

- Original Construction or Substantial Improvement
- Equipment with an estimated useful life of ten (10) years or more
- At least $20,000
- Projects spanning several years

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2025 Project Updates

- Buildings
  - Parking Lot Resurface
  - Roofing Project
  - Apparatus Bay Concrete Approach
- Downtown
  - Improvements Project
  - Parking Lot Resurface
- Parks
  - Medium Sized Project
  - Playground Equipment & Universal Access
- Streets
  - Overlays; Sidewalk Replacements; Asphalt Crack Sealing; Pavement Markings
  - Galvanized Water Service Replacement
  - Downtown Masonry Wall Repair
- Public Works
  - Sweeper and Sewer Debris Drying Beds
- Airport
  - Runway Rehab Design
  - Snow Removal Equipment
- WRRF
  - Boiler #2
  - Distribution System Replacements
  - Filter Actuator & Flow Meter Replacements
  - Lime Removal
  - Meter Replacements (paired with Water Project)
- Water
  - Oak Street Lift Station Generator
  - Watson Lift Station Upgrade
  - Plant Improvements, Replacements, and Upgrades
  - Scum Pump Replacement
  - Nelson Park Electrical Upgrades

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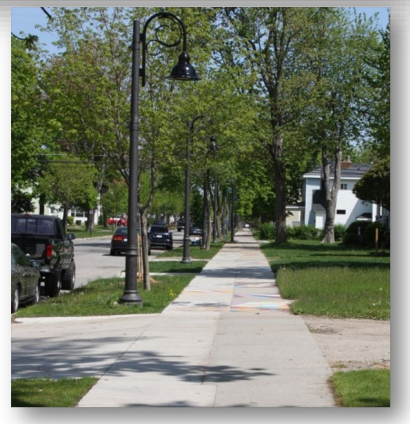
General Funds – 2026 Projects

Building Dept	**Total:**	**$1,466,000**	Page
Windows & Doors Replacement (City Hall)		66,000	18
Retaining Wall (City Hall)		1,400,000	14
City Clerk	**Total:**	**$120,000**	Page
Election Equipment Replacement		120,000	20
Public Works	**Total:**	**$329,000**	Page
Sidewalk Replacement		150,000	48
Storm Sewer Collection System Improvement		179,000	50



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Special Revenues – 2026 Projects

Downtown	Total:	$296,000	Page
Alleyway Renovations		266,000	22
Downtown Improvement Program		30,000	24

Parks	Total:	$2,949,000	Page
Chippewa River Bank Protection		610,000	34
Medium Size Project		54,000	36
Mid-Michigan/GKB Pathway Connections		2,100,000	38
Playground Equipment & Unv Access		40,000	42
Renv of Park Roads, Lots & Trails		145,000	44

Major Street	Total:	$2,107,000	Page
Resurfacing/Reconstruction		2,107,000	63

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Enterprise Funds – 2026 Projects

Airport	Total:	$3,430,000	Page
Runway 9/27 Rehabilitation		3,200,000	54
Snow Removal Equipment		230,000	55
Water	**Total:**	**$568,000**	Page
Chemical Feed Pump Replacement		40,000	67
Distribution System Replacement		60,000	70
Meter Replacement		348,000	76
Source Water Equipment Replacement		120,000	79
Water Resource Recovery Facility	**Total:**	**$797,000**	Page
Facility Improvements		275,000	82
Lift Station Improvements		74,000	84
Meter Replacement		348,000	86
Reconstruction and Relining		100,000	87

Mt. Pleasant

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Future Years 2027-2031

Ongoing

- Street reconstruction
- Sidewalk replacement
- Pedestrian lighting
- Mission Street safety & investment
- Parking lots
- Riverbank protection
- Sewer lines
- Water lines
- Plant replacements
- Downtown infrastructure
- Parks & trail maintenance
- Alley infrastructure
- Building maintenance

Mt. Pleasant
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Future Years 2027-2031

Projects

- Downtown streetscape
- Generator replacement
- Vehicle Storage Shelter
- Airport lighting transformers
- Mid-Michigan/GKB Pathway Connection
- Airport runway rehab
- Airport snow removal equipment

Mt. Pleasant
[meet here]

Next Steps

• Public Hearing (tonight)	May 27
• Required Adoption	June 9
• 2026 Operating Budget Submitted	September 8

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Questions?

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[meet here]

DIVISION OF PUBLIC SAFETY
CITY OF MT. PLEASANT

804 E. High Street, Mount Pleasant, MI 48858
Phone: (989) 779-5100 Fax: (989) 773-4020

MEMORANDUM

DATE: **May 20, 2025**
TO: **Aaron Desentz, City Manager**
FROM: **Paul Lauria, Director of Public Safety**
SUBJECT: **Authorization to Purchase Chevrolet Express Van and Contract for Vehicle Upfitting**

In the most recent Two-Percent funding cycle submitted to the Saginaw Chippewa Indian Tribe, the City was awarded funds to purchase a Chevrolet Express One-Ton Van. This vehicle will support operations for both the Emergency Services Team (EST) and the Youth Services Unit (YSU) of the Police Department.

Following the award notification, I contacted Berger Chevrolet, the MiDeal contract holder, to determine vehicle availability. Unfortunately, Berger does not currently have any qualifying vans in stock, nor are any available in the State of Michigan that meet our required specifications. I was informed that the only alternative would be to place a custom order for a 2026 model year van, with an estimated delivery date in late 2025 or early 2026. Berger also recommended searching Chevrolet's national inventory for available vehicles in nearby states.

As a result of this search, I located a brand-new, unsold 2024 Chevrolet Express One-Ton Van at Fredrick Chevrolet in Lebanon, Pennsylvania. This vehicle meets all required specifications and is available at government pricing comparable to the MiDeal contract. Fredrick Chevrolet is also able to complete the sale tax-exempt.

Additionally, the vehicle will require upfitting by Quigley Motor Company, a Chevrolet-certified partner located approximately 40 minutes from Fredrick Chevrolet in Manchester, Pennsylvania. Fredrick Chevrolet has agreed to transport the vehicle to Quigley at no additional cost. The City would be responsible only for retrieving the vehicle following the completion of the upfitting.

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Request for Approval

I request that the City Commission authorize the following:

- The purchase of one (1) 2024 Chevrolet Express One Ton Van from Fredrick Chevrolet of Lebanon, PA.
- Contracting Quigley Motor Company to perform the necessary vehicle upfitting.
- Approval of a total expenditure not to exceed $80,640.

Funding for this purchase includes $58,000 awarded through the Spring 2025 Saginaw Chippewa Indian Tribe Two-Percent Distribution. The remaining $22,640 will be covered using salary savings from currently vacant positions within the Police Department.

If you have any questions, please do not hesitate to contact me. Thank you in advance for your consideration.