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2016 – 2025 Pavement Maintenance Program

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Rush City Public Schools Independent School District 139

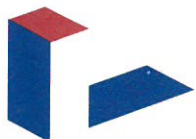
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March 2016

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PROJECT: Pavement Maintenance Program
Rush City Public Schools

DATE: March 9, 2016
FILE NO.: 213731

REPORTED TO:

Rush City Public Schools
51001 Fairfield Avenue
Rush City, MN 55069

Attn: Jeanne Korf

PAVEMENT MAINTENANCE PROGRAM

GENERAL

In accordance with our letter of proposal, our personnel performed an evaluation of the existing bituminous parking lots, drives, concrete walkways, and outdoor athletic facilities located at Rush City High School, Jacobson Elementary School, the Aquatic/Recreation Center, and the Transportation Building. The purpose of the evaluation was to identify anticipated pavement maintenance needs over the next ten-year period and provide annual maintenance budget estimates.

Our personnel performed field evaluations, engineering analyses, budget preparation, and report preparation. Following the field examinations, we prepared preliminary maintenance budgets and reviewed them with you. The enclosed annual budgets represent our opinion of the required funding needed to maintain the existing pavement surfaces at the four Rush City School District facilities identified above, over the next ten-year period.

FIELD EVALUATION

Our field evaluation consisted of visually examining the overall condition of each paved surface, noting the type and severity of pavement distress, and determining the appropriate type of maintenance treatment. Pavement condition photographs were obtained and used in the overall analysis and are included with this report.

ENGINEERING ANALYSIS

Several maintenance alternatives were reviewed and, after analysis, the basic methods of pavement treatment considered were: 1) pavement overlay; 2) seal coating; 3) resurfacing; 4) bituminous pavement repair or reconstruction; and 5) portland cement concrete repair or replacement. A summary of the proposed type of maintenance, schedule, and budget is included in this report. To assist with some of the terminology, the following maintenance strategies are presented.

- Overlays

Overlaying the pavement provides a new wearing surface and can add to the strength of the pavement section. The overlay procedure consists of applying a tack coat to the clean pavement surface, placing a layer of bituminous pavement ranging from one to several inches thick, and compacting the new bituminous material with rollers. Two types of overlays were considered: 1) a thin lift (1" to 1-1/2" depth) overlay which provides a durable wearing surface for pavements that are badly weathered and rough; and 2) an overlay greater than 1-1/2" which provides increased structural strength, as well as a new wearing surface. We recommend thin lift overlays in areas that are extremely raveled and in need of a new wearing surface, and overlays greater than 1-1/2" in areas that have extensive cracking and are in need of additional structural strength.

- Seal Coat

Seal coating generally consists of using a CRS-2 emulsified asphalt and either a crushed trap rock or granite aggregate. The asphalt emulsion is applied to the pavement with a distributor truck at a rate of 0.25 to 0.30 gallons per square yard of residual asphalt, and the seal coat aggregate is applied at a rate of 25 to 30 pounds per square yard with a truck spreader within one minute after the emulsion is applied. A pneumatic rubber-tired roller then travels across the newly placed aggregate to embed it into the oil. After two to three weeks, the loose aggregate is swept, removed, and the paved surface can be striped. This system provides an economical means of maintenance to extend pavement life.

- Asphalt Emulsion Resurfacer

Bituminous pathways and playgrounds that do not require pavement overlays are typically treated with an asphalt emulsion resurfacer. A resurfacer levels asphalt surfaces with a fine sand, instead of an aggregate, to provide a smoother and safer play area. Application of a resurfacer provides a protective coating for the bituminous pavement that extends its life. Prior to application, all cracks larger than 1/4" should be routed and filled with a rubberized elastomeric crack sealant material.

- Bituminous Repair or Reconstruction

Damaged pavements, such as potholes or alligatored areas, are excavated to a predetermined depth. A specified depth of base course aggregate is placed and compacted, followed with surfacing of plant mix bituminous pavement.

- Portland Cement Concrete Repair or Replacement

Concrete slabs that exhibit significant amounts of distress, such as large panel cracks, extensive surface scaling, or joint deterioration should be rehabilitated. In pedestrian areas, concrete panels that are settled or present a tripping hazard should also be replaced. When an entire concrete panel section is removed, the subgrade soil should also be evaluated. If soft or unstable subgrade is encountered, it should be removed and replaced. The new concrete can be placed and consolidated in one lift over the prepared subgrade.

BUDGET PREPARATION

The budget analysis was based upon a network evaluation of all paved surfaces. In network analysis, the most important step is projecting the future condition of each paved surface. As the maintenance program is put to use, identified future budget needs will likely contribute significant input toward allocating the upcoming year's budget. When budgets are approved, and monies are allocated for maintenance, the prioritized areas will be examined and annual projects will be designated. A project level survey will then be required to prepare plans and specifications for seal coats, overlays, reconstruction, etc.

Bituminous pavements typically require maintenance, such as a seal coat or pavement overlay, approximately every five or six years. Concrete pavements on the other hand, typically do not require nearly as much maintenance and tend to either be performing well overall or damaged to the point of needing replacement. For this reason, the majority of the recommended concrete work falls within the first few years on the recommended budget, while the recommendations for the asphalt parking and drive areas are more spread out over the next ten-year period on the budget.

The most economic means of money expenditure would be to perform seal coats on a regular schedule to reduce the amount of required overlays and, subsequently, to perform overlays when conditions warrant to avoid pavement reconstruction. Seal coats can be performed three to four times before equaling the cost of one overlay and, similarly, three to four overlays can be performed for the cost of one pavement reconstruction.

The maintenance budget included with this report lists each major pavement area at the four Rush City School District facilities. The approximate size of each significant pavement area, general scope, calendar year of recommended maintenance activity, and our opinions of the associated maintenance costs are also identified on the maintenance budget sheet. The annual budget estimates were prepared using a 5% annual inflation factor to provide a more realistic dollar value for the year in which the funds are recommended to be allocated. The final recommended annual budget figures also include estimated engineering fees and approximately 10% for contingencies.

Each pavement area was measured and correlated with information from existing site drawings, as well as discernable variations observed and measured in the field. A sketch of each facility and its significant pavement areas is included with this report. Each sketch is color-coded to more easily identify the areas to be maintained in a given calendar year. The ten-year budget tabulation sheet is required when correlating the color-coded area with the type of recommended maintenance treatment. To more clearly show the present pavement condition at each of the sites, photographs are included of representative surface conditions. The number designated on the sketches correlates with the number on the photograph.

STANDARD OF CARE

The evaluations and recommendations contained in this report are for budgeting purposes only. As projects develop and construction is scheduled, a more comprehensive evaluation of the project areas should be performed to verify or modify these recommendations.

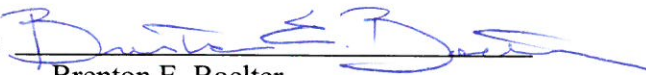
To properly utilize this maintenance program, an annual examination of each paved surface should be performed and the ten-year budget updated. The pavement conditions will vary due to climatic conditions, changed usage, rerouting of traffic, etc., requiring different surface treatment priorities. The recommendations in this report represent our professional opinions, which were arrived at in accordance with currently accepted engineering practices; other than this, no warranty is implied or intended.

REMARKS

We have enjoyed examining the paved surfaces for Rush City Public Schools and preparing this maintenance program.

If there are any questions regarding this report, please do not hesitate to contact us.

INSPEC

By: 
Brenton E. Boelter
Senior Consultant

BEB/bap

Rush City Public Schools - ISD #139
Pavement Maintenance Program
Ten-Year Budget

| Size | Pavement Area | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|----------------------------------|-------------------------------|------------------------|------------------------|-----------------------|------------|-----------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| Rush City High School | | | | | | | | | | | |
| Bitumimous Pavements | | | | | | | | | | | |
| 9,900 sy | Tiger Trail | | \$30,000 ¹ | | | | | \$135,000 ² | | | |
| 9,300 sy | Southwest Parking Lot | | \$25,000 ¹ | | | | | | \$130,000 ² | | |
| 2,950 sy | North Drive | | | \$8,000 ¹ | | | | | \$11,000 ¹ | | |
| Concrete Pavements | | | | | | | | | | | |
| 37,100 sf | Pedestrian Sidewalks | \$24,000 ³ | | \$22,000 ⁴ | | | | | | | |
| Athletic Facilities | | | | | | | | | | | |
| 8-lane | Athletic Track & Field Events | | \$225,000 ⁵ | | | | | | | \$120,000 ⁶ | |
| 2 crts | Tennis Courts | | | | | \$50,000 ⁷ | | | | | \$20,000 ⁸ |
| SUBTOTALS | | \$24,000 | \$280,000 | \$30,000 | \$0 | \$50,000 | \$0 | \$135,000 | \$141,000 | \$120,000 | \$20,000 |
| C.E. Jacobson Elementary | | | | | | | | | | | |
| Bitumimous Pavements | | | | | | | | | | | |
| 3,250 sy | West Parking Lot | | | \$9,000 ¹ | | | | | \$45,000 ² | | |
| 3,000 sy | Bus Loop | | | \$9,000 ¹ | | | | | \$42,000 ² | | |
| 4,550 sy | East Parking Lot | \$120,000 ⁹ | | | | | | \$15,000 ¹ | | | |
| 2,600 sy | North Playground | | | \$7,000 ¹⁰ | | | | | | \$30,000 ¹¹ | |
| Concrete Pavements | | | | | | | | | | | |
| 33,800 sf | Pedestrian Sidewalks | | \$10,000 ¹² | | | | | | | | |
| SUBTOTALS | | \$120,000 | \$10,000 | \$25,000 | \$0 | \$0 | \$0 | \$15,000 | \$87,000 | \$30,000 | \$0 |
| Aquatic/Recreation Center | | | | | | | | | | | |
| Bitumimous Pavements | | | | | | | | | | | |
| 2,020 sy | North Parking Lot | \$5,000 ¹ | | | | | \$26,000 ² | | | | |
| 160 sy | West Drive | \$7,000 ¹³ | | | | | | \$1,000 ¹ | | | |
| Concrete Pavements | | | | | | | | | | | |
| 12,400 sf | Pedestrian Sidewalks | \$18,000 ¹⁴ | | | | | | | | | |
| 1,850 sf | West Dumpster Area | \$20,000 ¹⁵ | | | | | | | | | |
| 19,250 sf | Pool Deck | \$5,000 ¹⁶ | | | | | | | | | |
| SUBTOTALS | | \$55,000 | \$0 | \$0 | \$0 | \$0 | \$26,000 | \$1,000 | \$0 | \$0 | \$0 |

Rush City Public Schools - ISD #139
Pavement Maintenance Program
Ten-Year Budget

| Size | Pavement Area | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 | 2024 | 2025 |
|-------------------------------------|----------------------|------------------|------------------|-----------------------|-------------------------|-----------------|-----------------|------------------|------------------|------------------|-----------------------|
| Transportation Building | | | | | | | | | | | |
| Gravel Parking Lot | | | | | | | | | | | |
| 5,300 sy | South Parking Lot | | | | \$270,000 ¹⁷ | | | | | | \$13,000 ¹ |
| Concrete Pavements | | | | | | | | | | | |
| 3,530 sf | Garage Apron | | | | | | | | | | |
| 2,050 sf | Pedestrian Sidewalks | | | \$2,000 ¹⁸ | | | | | | | |
| SUBTOTALS | | \$0 | \$0 | \$2,000 | \$270,000 | \$0 | \$0 | \$0 | \$0 | \$0 | \$13,000 |
| Annual Construction Cost | | \$199,000 | \$290,000 | \$57,000 | \$270,000 | \$50,000 | \$26,000 | \$151,000 | \$228,000 | \$150,000 | \$33,000 |
| Engineering Design | | \$10,000 | \$15,000 | \$3,000 | \$14,000 | \$3,000 | \$1,000 | \$8,000 | \$11,000 | \$8,000 | \$2,000 |
| Construction Administration | | \$10,000 | \$15,000 | \$3,000 | \$14,000 | \$3,000 | \$1,000 | \$8,000 | \$11,000 | \$8,000 | \$2,000 |
| Recommended Budget (Note 19) | | \$241,000 | \$352,000 | \$69,000 | \$328,000 | \$62,000 | \$31,000 | \$184,000 | \$275,000 | \$183,000 | \$41,000 |

Notes:

1. Opinion of probable construction cost represents crack sealing and seal coating the pavement area.
2. Opinion of probable construction cost represents 2" bituminous overlay.
3. Opinion of probable construction cost represents approximately 3,000 ft² of damaged/settled concrete repairs along Tiger Trail and near the south & east building entrances.
4. Opinion of probable construction cost represents approximately 2,500 ft² of damaged/settled concrete repairs west & north of the school building.
5. Opinion of probable construction cost represents removal and replacement of all-weather surfacing and bituminous pavement.
6. Opinion of probable construction cost represents placement of structural spray.
7. Opinion of probable construction cost represents removal and replacement of bituminous pavement and color coating.
8. Opinion of probable construction cost represents color coating the tennis courts.
9. Opinion of probable construction cost represents reclaiming existing bituminous pavement and placing a new pavement section.
10. Opinion of probable construction cost represents crack sealing and application of an emulsified resurfacer in the pavement area.
11. Opinion of probable construction cost represents 1-1/2" bituminous overlay.
12. Opinion of probable construction cost represents approximately 1,200 ft² of damaged/settled concrete repairs near dumpsters, building entrances, and in the playground area.
13. Opinion of probable construction cost represents reconstruction of bituminous pavement area.
14. Opinion of probable construction cost represents approximately 2,200 ft² of damaged/settled concrete repairs near building entrances and walkways adjacent to Eliot Avenue.
15. Opinion of probable construction cost represents reconstruction of concrete pavement area.
16. Opinion of probable construction cost represents approximately 500 ft² of damaged/settled concrete repairs.
17. Opinion of probable construction cost represents construction of new bituminous pavement section and a contingency for a stormwater management facility.
18. Opinion of probable construction cost represents approximately 200 ft² of settled concrete repairs adjacent to doorway stoops.
19. Recommended budget includes approximately 10% contingencies.

SYMBOLS KEY

PHOTO NUMBER
AND DIRECTION



YEAR OF SCHEDULED
PAVEMENT ACTIVITY

- 2016

2017

2018

2019

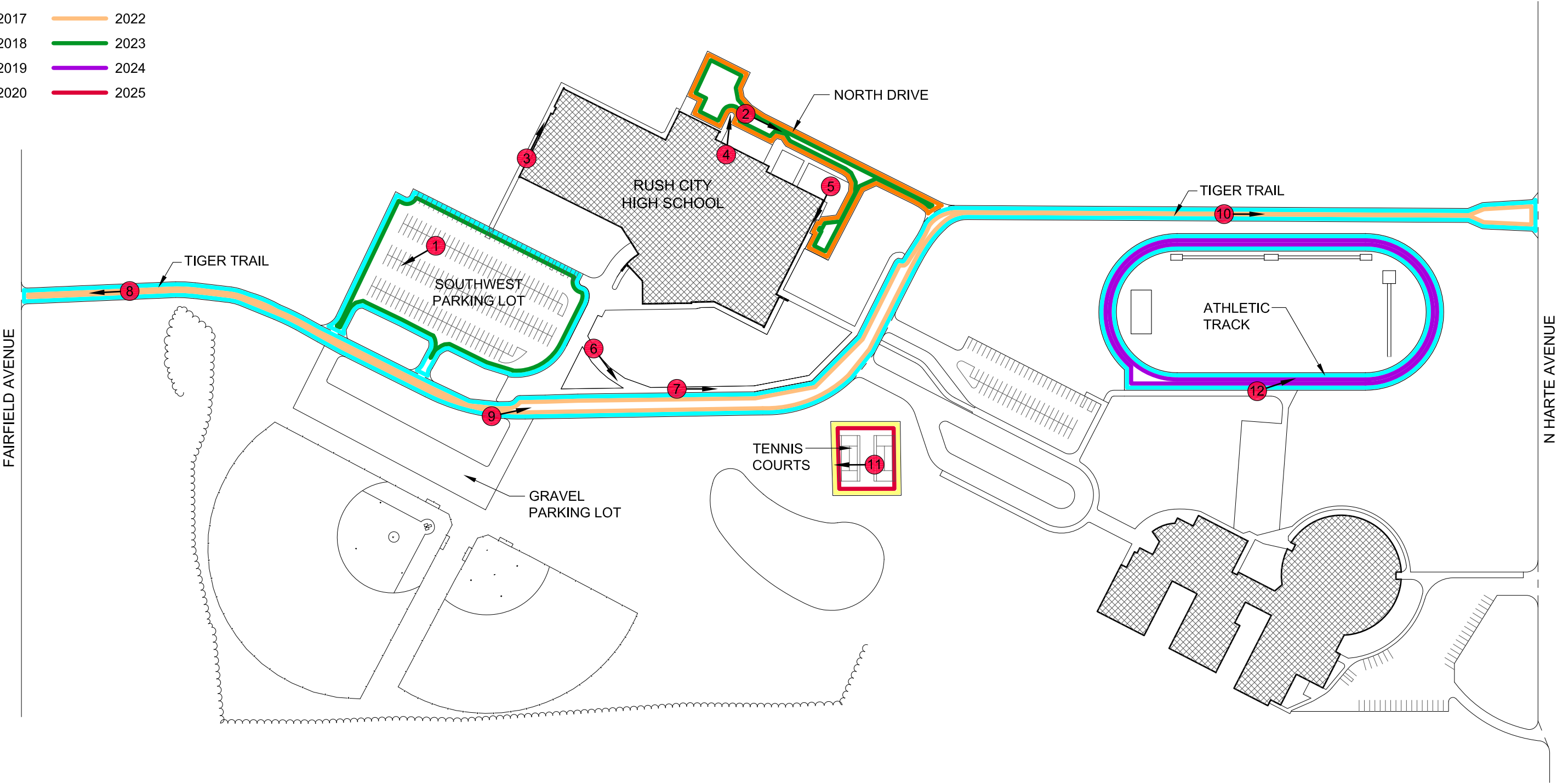
2020
- 2021

2022

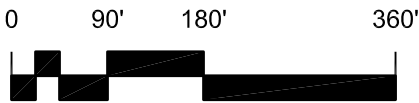
2023

2024

2025



SITE PLAN



SCALE: 1" = 180'-0"



NORTH

Client:
RUSH CITY PUBLIC SCHOOLS
INDEPENDENT SCHOOL DISTRICT #139
Project title:
PAVEMENT MANAGEMENT PROGRAM
RUSH CITY HIGH SCHOOL - 51001 FAIRFIELD AVENUE
RUSH CITY, MINNESOTA

DATE: 03/09/16
CLIENT PROJECT No.: 213731
INSPC PROJECT No.: BEB
PROJECT MGR: BJT
DRAWN BY: MDR
CHECKED BY:

Sheet No.:

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RUSH CITY HIGH SCHOOL



RUSH CITY HIGH SCHOOL

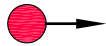


RUSH CITY HIGH SCHOOL



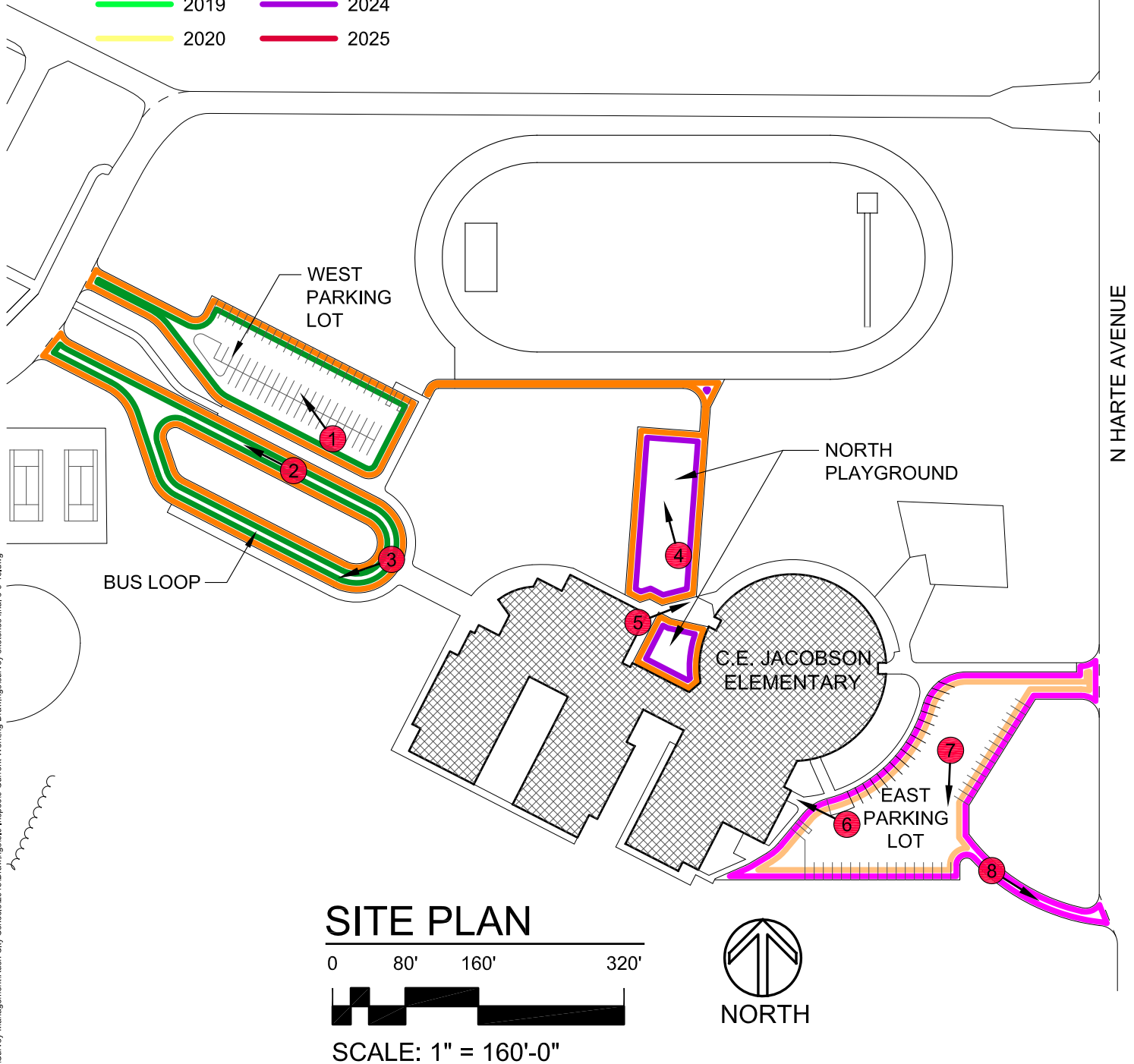
SYMBOLS KEY

PHOTO NUMBER
AND DIRECTION



YEAR OF SCHEDULED
PAVEMENT ACTIVITY

| | |
|------|------|
| 2016 | 2021 |
| 2017 | 2022 |
| 2018 | 2023 |
| 2019 | 2024 |
| 2020 | 2025 |



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Client:
RUSH CITY PUBLIC SCHOOLS
INDEPENDENT SCHOOL DISTRICT #139
Project title:
PAVEMENT MANAGEMENT PROGRAM
C.E. JACOBSON ELEMENTARY - 95 SOUTH HARTE AVENUE
RUSH CITY, MINNESOTA

DATE: 03/09/16
CLIENT PROJECT No.:
INSPC PROJECT No.: 213731
PROJECT MGR: BEB
DRAWN BY: BJT
CHECKED BY: MDR

Sheet No.:

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C.E. JACOBSON ELEMENTARY SCHOOL




C.E. JACOBSON ELEMENTARY SCHOOL



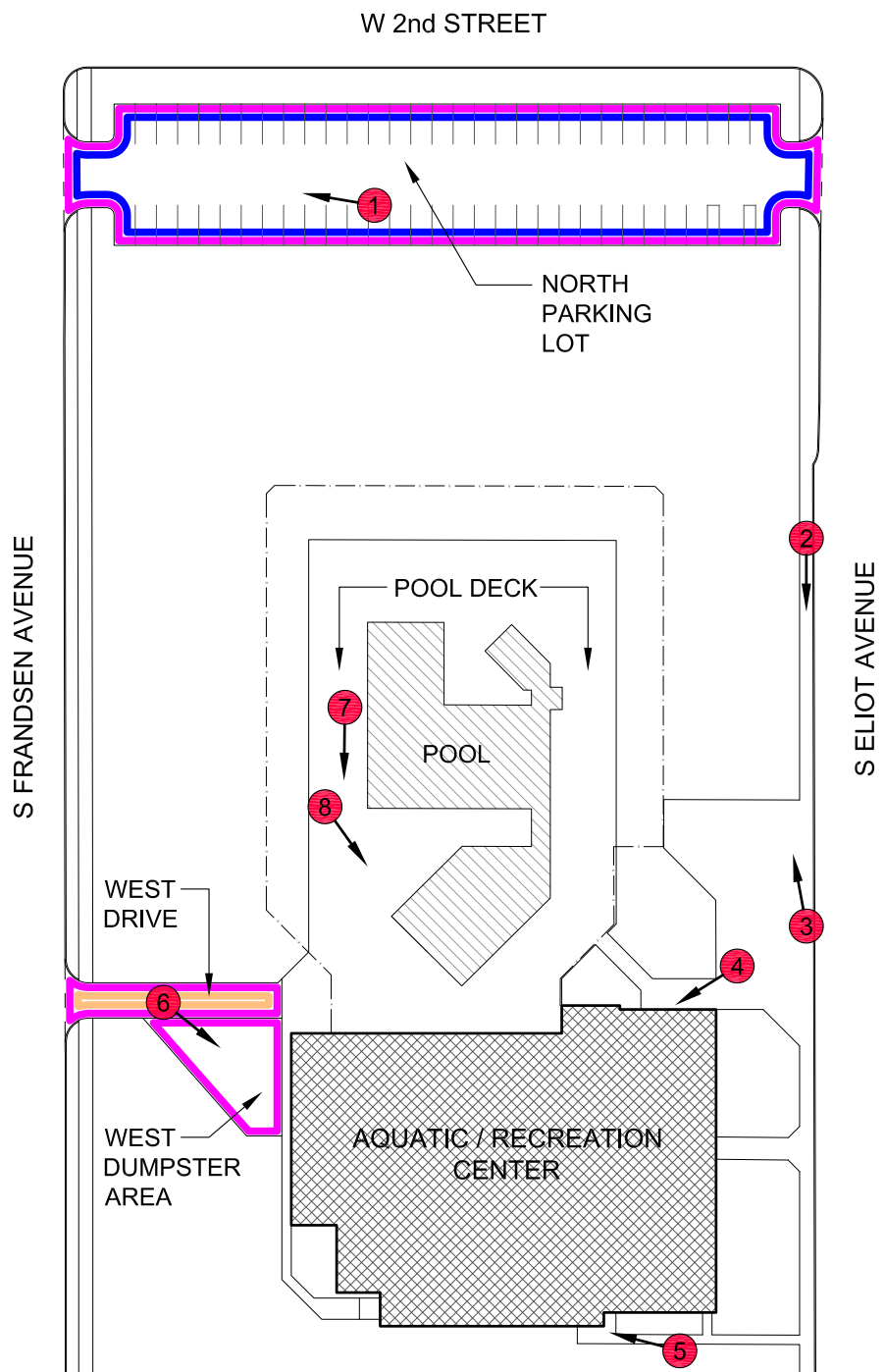
SYMBOLS KEY

PHOTO NUMBER
AND DIRECTION



YEAR OF SCHEDULED
PAVEMENT ACTIVITY

| | |
|------|------|
| 2016 | 2021 |
| 2017 | 2022 |
| 2018 | 2023 |
| 2019 | 2024 |
| 2020 | 2025 |



SITE PLAN

0 40' 80' 160'



SCALE: 1" = 80'-0"



NORTH

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Client:
RUSH CITY PUBLIC SCHOOLS
INDEPENDENT SCHOOL DISTRICT #139
Project title:
PAVEMENT MANAGEMENT PROGRAM
AQUATIC/RECREATION CENTER - 305 SOUTH ELIOT AVENUE
RUSH CITY, MINNESOTA

DATE: 03/09/16
CLIENT PROJECT No.:
INSPC PROJECT No.: 213731
PROJECT MGR: BEB
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AQUATIC/RECREATION CENTER

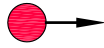


AQUATIC/RECREATION CENTER



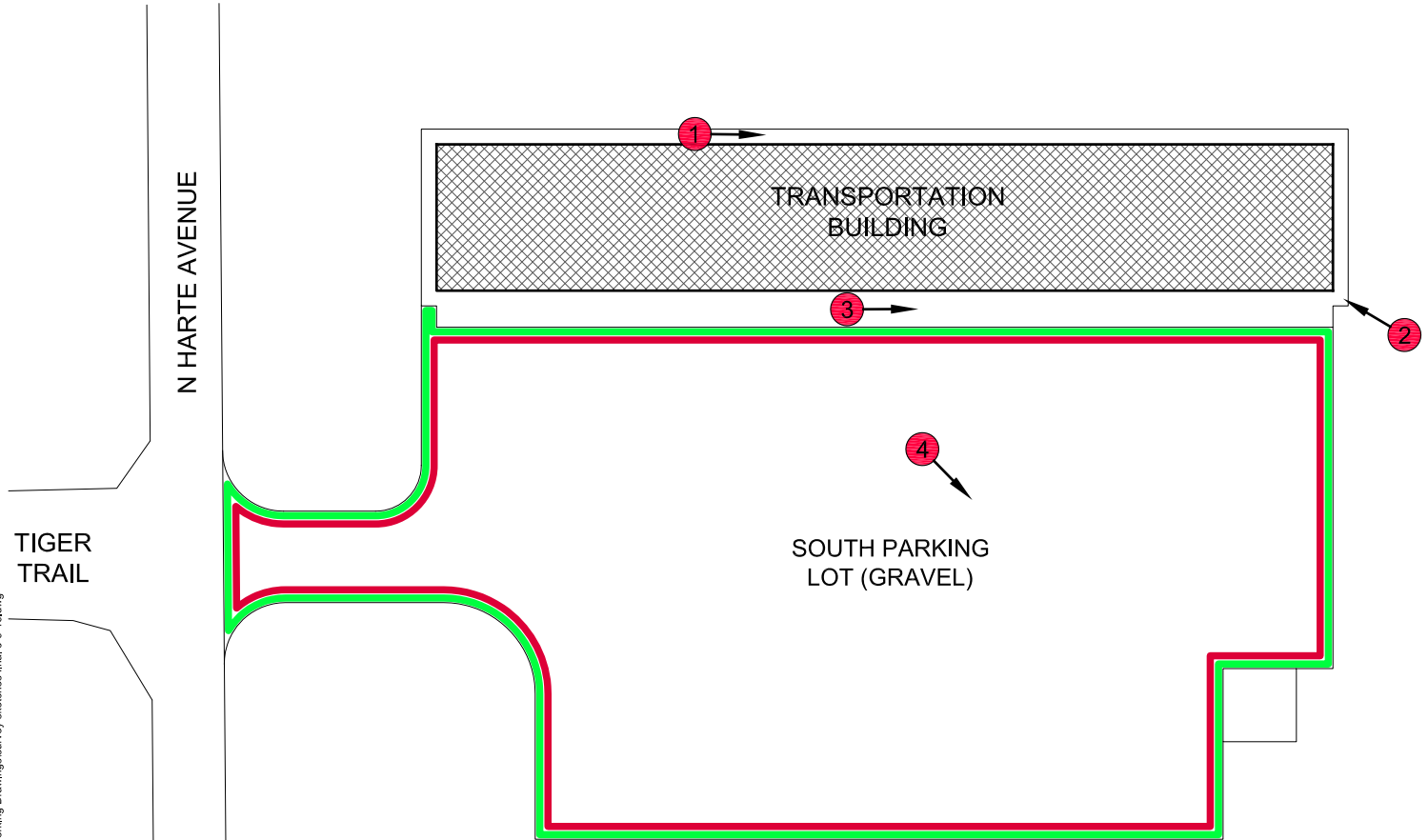
SYMBOLS KEY

PHOTO NUMBER
AND DIRECTION

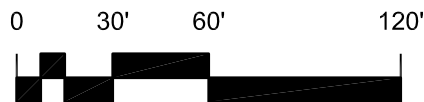


YEAR OF SCHEDULED
PAVEMENT ACTIVITY

| | |
|------|------|
| 2016 | 2021 |
| 2017 | 2022 |
| 2018 | 2023 |
| 2019 | 2024 |
| 2020 | 2025 |



SITE PLAN



SCALE: 1" = 60'-0"



NORTH

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Client:
RUSH CITY PUBLIC SCHOOLS
INDEPENDENT SCHOOL DISTRICT #139
Project title:
PAVEMENT MANAGEMENT PROGRAM
TRANSPORTATION BUILDING - 120 NORTH HARTE AVENUE
RUSH CITY, MINNESOTA

DATE: 03/09/16
CLIENT PROJECT No.:
INSPEC PROJECT No.: 213731
PROJECT MGR: BEB
DRAWN BY: BJT
CHECKED BY: MDR

Sheet No.:

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TRANSPORTATION BUILDING

