312 Roadway Plan-Profile

312.1 General

The Roadway Plan-Profile sheet provides the complete horizontal and vertical alignments for the project. Various roadway elements such as pavement width, medians, paved shoulders, curbs, drainage elements, tapers, turn provisions, and intersecting roadways, are shown on this sheet.

Prepare the Roadway Plan-Profile sheet according to the standard formatted sheets that are contained in the FDOT CADD Software. Recommended scales for facility locations are as follows:

Location	Horizontal Scale
Inside Urban Boundary	1” = 40’/50’
Outside Urban Boundary	1” = 100’/200’

When appropriate, the plan-profile sheet may be divided into separate plan sheets and profile sheets.

312.2 Roadway Plan Portion

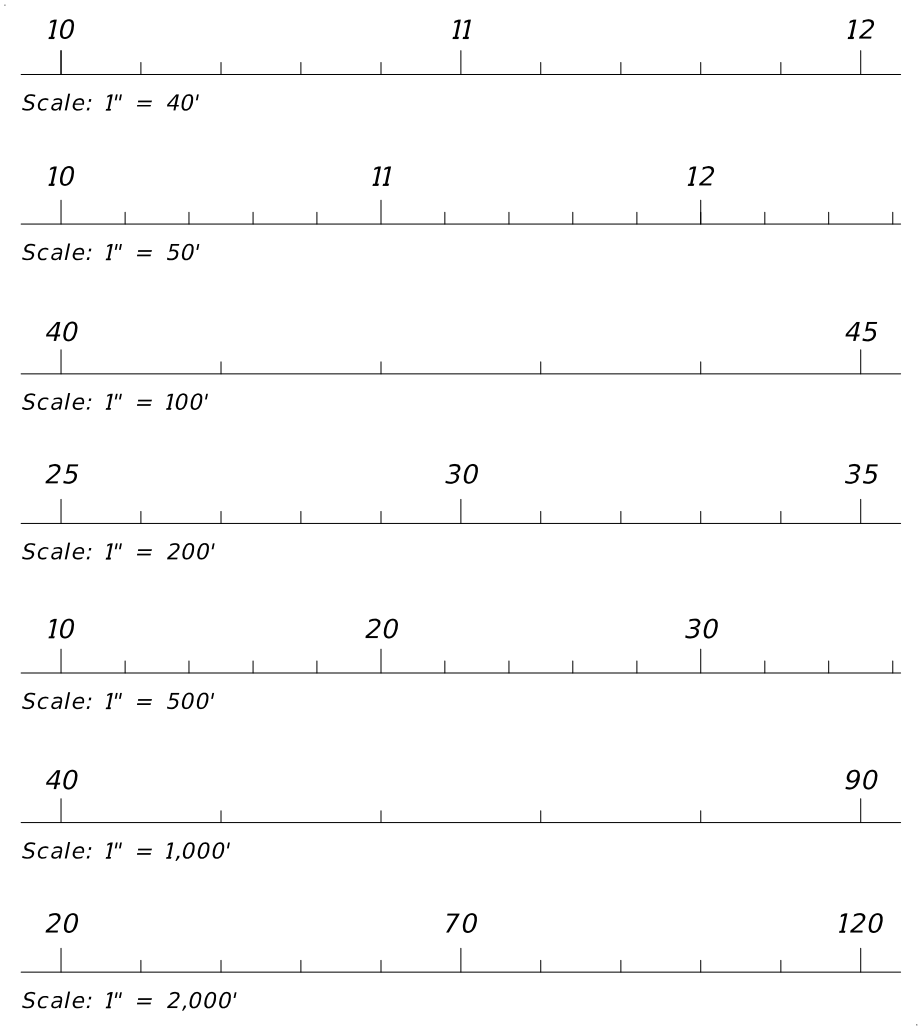
312.2.1 Centerline

Place the baseline of survey or centerline of construction in the center of the plan portion of the sheet, with stationing increasing from left to right. For resurfacing projects, simple projects, or sections of a project without a profile view, “stacking” multiple plans on one sheet is optional if clarity and legibility are maintained. When multiple plan views are shown on a plan sheet, they must be stacked from top to bottom. When the alignment includes horizontal curves, lay the centerline on the sheet in such a manner to avoid breaks or match lines (except at the beginning or end of the sheet).

Place "tick" marks on the upper side of the centerline at every station as shown in ***Figure 312.2.1***. Place intermediate ticks between the station ticks. Intermediate ticks should be approximately half the length of station ticks.

Place station numbers close to station ticks for scales up to and including 1" = 50' and outside the R/W lines for smaller scales.

Figure 312.2.1 Centerline Station Numbering and Tick Marks



Show bearings for tangent sections (in the direction of stationing) below the baseline and centerline. Where appropriate, tie intersecting roads or streets by station and angle/bearings to the baseline or centerline. Section lines or city limits must be tied by station and angle/bearings to the baseline or centerline.

In cases where the construction centerline does not coincide with the survey baseline, the construction centerline must be identified with complete alignment data and tied to the survey baseline; however, the construction centerline need not be shown when it is uniformly offset from the survey baseline for the entire length of the project and is shown on the typical section. Show all station equations occurring on the survey baseline and those equating the survey baseline and construction centerline.

Place a north arrow and scale at a point of maximum visibility, typically in the upper right portion of the plan view.

312.2.2 Horizontal Curves

Designate PC and PT points of horizontal curves by small circles with short radial lines from these points. Designate PI points by a small triangle with a short section of tangent on either side.

Properly orient the horizontal curves within the plan view when clipping plan sheets. Repeat the curve data on each sheet when a curve extends over more than one plan sheet. Show horizontal curve data using the following format:

CURVE DATA

PI (Station)

Δ (Delta Angle with Direction)

D (Degree of Curve)

T (Tangent Length)

L (Length of Curve)

R (Radius Length)

PC (Station)

PT (Station)

e (Superelevation Rate)

312.2.3 Existing Topography

Show and label all existing topography, including roads, streets, drives, buildings, underground and overhead utilities, walls, curbs, pavements, fences, railroads, bridges, drainage structures and similar items. Also show streams, ponds, lakes, wooded areas, ditches and other physical features. Existing gasoline storage tanks within limits of topographical survey must be shown.

Show and label all existing utilities. If the type of utility is unknown it should be labeled as such. Indicate the line voltage for all overhead electrical power lines. Use standard symbols contained in the FDOT CADD Software.

312.2.4 Construction and Project Limits

Flag and station the following limits:

(1) Begin project and end project. Project limits should be at the beginning and the end of the full typical sections. Begin construction and end construction where construction limits are other than project limits. Transitions for maintenance of traffic and other construction work such as feathering, friction course, guardrail, drainage work, signing and marking work, and sidewalk may fall outside of the project limits but must be included within the construction limits. If plans include more than one project, identify the limits for each by Financial Project ID. The Engineer of Record is responsible for determining project and construction limits.

Modification for Non-Conventional Projects:
Delete the last sentence of the above paragraph and replace with the following: The Department will set the project and construction limits.

(2) The limits of project breakdown necessary for separation of length and quantities for federal aid and non-federal aid projects.

(3) The limits of each type of construction classification where more than one type is involved, such as, new construction, resurfacing, bridge work, widening, and milling.

(4) The begin and end limits of project exceptions (excluded areas).

(5) Station equations.

312.2.5 Drainage Structures and Bridges

Show proposed cross drain pipes, box culverts and three-sided culverts by using a symbol and a drainage structure number. Label cross drain pipe sizes and lengths on plan-profile sheet. Show box and three-sided culvert lengths on drainage structure sheet.

Box and three-sided culverts (single or multiple) are classified as bridge culverts when the total span (measured along the center of the roadway) is 20 feet or greater. Flag and station the begin station and end station for the bridge culvert (outside wall to outside wall). Provide a bridge number and a drainage structure number for all bridge culverts.

Show proposed bridges and approach slabs by simple outline. Flag and station the begin station and end station for the bridge and for the approach slabs. Also provide a bridge number. Show the existing vertical clearance for any construction affecting existing bridges.

When appropriate, show a short section of lateral ditch/outfall centerline on the Roadway Plan-Profile sheet, and include a note referring to lateral ditch/outfall sheets for details.

Show the proposed drainage system by depicting storm drain pipes with a single line, and the outline of inlets, manholes and junction boxes. The outline of structure bottoms may be shown. Label the pipe size and length between structures. Provide structure numbers for inlets, manholes, junction boxes and special structures.

312.2.6 Plan Layout

Provide the following dimensions or labeling:

(1) Show R/W lines. Dimension the R/W line only if the applicable typical section shows a varying dimension from the baseline or centerline. Dimensions of the R/W line must be from the centerline or baseline, if survey and construction lines are parallel; otherwise dimension the R/W line from the construction centerline.

(2) Avoid showing detailed information regarding median openings or intersections when specific details can be grouped on a separate sheet. When this is the case, identify median openings and intersections by station location.

(3) Label locations along the alignment where traveled way dimensions change, or begin to change, including the station and dimensions of the traveled way.

(4) Show curb, curb and gutter, traffic separators, sidewalks, curb ramps, retaining walls, and driveways.

(5) Show stations of return points in tabular form or include on the plan, unless shown on an intersection detail sheet. Also, show offsets, if not governed by a typical.

(6) Show station of radius points of traffic separator or median curb at median openings on the plan. Elevation of these points must also be shown if not shown in the intersection details sheet.

(7) Indicate control radii for traffic turns when setting median nose locations, unless shown on the intersection detail sheet.

(8) Include the station of end of curb and gutter at side street intersections (when end is not at a return point) with proposed gutter grade elevation.

(9) Indicate the limits of pavement and grading at side street intersections.

(10) When incidental construction extends beyond the R/W lines, construction easements or license agreements may be required and should be shown on the plan sheets.

(11) Show the limits of wetlands based on permit or regulatory requirements.

(12) Show all utilities. Label field verified utilities (see *Quality Level "A" locates*, ***FDM 221,***) in accordance with the following symbol:

V_{vh} = Verified Vertical Elevation and Horizontal Location

Projects with minor utility work or impacts may include these features on the Roadway Plan-Profile sheet.

(13) Identify all traffic monitoring sites in or within one-half mile of the project limits with the following notation:

Traffic Monitoring Site Number (XXXX)

Roadway Identifying Number (Roadway Characteristics Inventory (RCI) Section #) Milepost (XX.XXX)

Site includes vehicle detectors in roadway and pedestal, pole or base mounted cabinet, buried cable, and solar power unit on R/W.

Inquiries about monitoring sites should be addressed to the Traffic Data Section Manager of the Transportation Statistics Section, Office of Planning.

312.3 Roadway Profile Portion

312.3.1 General Data

Preformatted plan-profile sheets are located in the FDOT CADD Software. The grid portion of each sheet is used for plotting the project profile. The standard grid pattern for the profile portion of the sheet is five lines per inch, both in the horizontal and vertical. This will accommodate most scales. An optional grid with four lines per inch is available. This sheet may be used if approved by the district.

The horizontal scale for the profile portion of the sheet must be the same as that used for the plan portion. Station limits of the profile must correspond to those of the plan portion of each sheet. Station numbers must be placed across the bottom of the sheet just above the title block. Intervals for profile stations must be the same as those in the plan view.

Select the vertical elevation datum such that the profile will not crowd either the upper or lower limits of the profile format. As a general guideline the vertical scale should be 10%

of the horizontal grid. Show the elevation datum on both the left and right sides of the sheet in the space provided adjacent to the grid.

Label the existing ground line profile and show the existing ground line elevations vertically, just above the station numbers at each end of the sheet only. Show and label all high water elevations affecting base clearance or roadway grades. Refer to ***Exhibit 312-1*** for correct format.

Show station equations and exceptions. Begin and end stations of project, construction, bridge and bridge culverts must also be shown.

312.3.2 Vertical Alignment

Show and label the proposed profile grade. Vertical curve PCs and PTs must be indicated by small circles and PIs by a small triangle with short sections of tangent shown on each side. Show percent grade to three significant decimal places on the tangent line (trailing zeros need not be shown). Extend vertical lines from the PC and PT points and place a dimension line indicating the length of the vertical curve. The PC and PT stations and elevations must be labeled on the vertical lines.

For vertical curves, show the profile grade elevations on even stations and at appropriate intervals. Place the elevations between the dimension line and the grade line. Also, place the curve length, dimension lines and the profile grade elevations above the grade line for sag vertical curves and below the grade line for crest vertical curves. The dimensions and elevations must be placed reasonably near the grade line whenever possible. The PI station and elevation must be noted, lettered vertically above the PI symbol for crest curves and below for sag curves.

Show the profile grade elevation of the beginning and ending station of each sheet vertically just above the grade line, except when the beginning or ending station is on a vertical curve.

312.3.3 Grades

Label percent grade to three decimal places for each tangent section on every sheet (trailing zeros need not be shown). When two tangent grades intersect and no vertical curve is required, label the PI station and elevation vertically, using the same criteria as for vertical curves.

312.3.4 Superelevation and Special Profiles

For non-standard superelevated sections of the project, the beginning and ending superelevation stations should be indicated on the profile with a note:

"For Superelevation details see Special Profiles Sheet"

Other special profiles that cannot be clearly shown on the plan-profile sheets must be referenced in a similar manner to non-standard superelevated sections. For additional information regarding special profiles see ***FDM 313***.

312.3.5 Other Profile Features

For flush shoulder roadways, show and label special ditches in the profile. Show percent ditch grade and a beginning or ending ditch PI with elevation and station plus. For multi-lane divided projects, three special ditch grades (right and left roadway ditches and median ditch) sometimes occur at the same location. In such cases, it may be advantageous to show the median ditch at a convenient location on the sheet with a separate elevation datum.

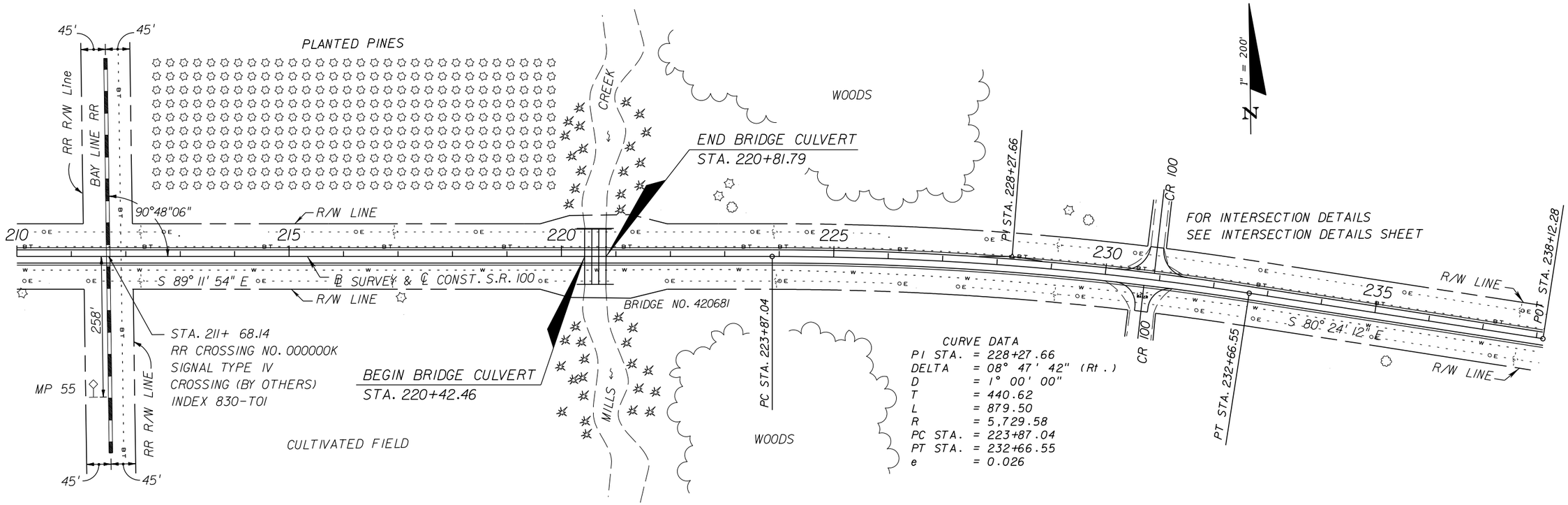
Depict uniform ditches of non-standard depth by a dimension line in the lower portion of the grid and label as a special ditch with location and depth, or show them by flagging the DPIs at each end with station elevation and side. Standard depth ditches are not labeled.

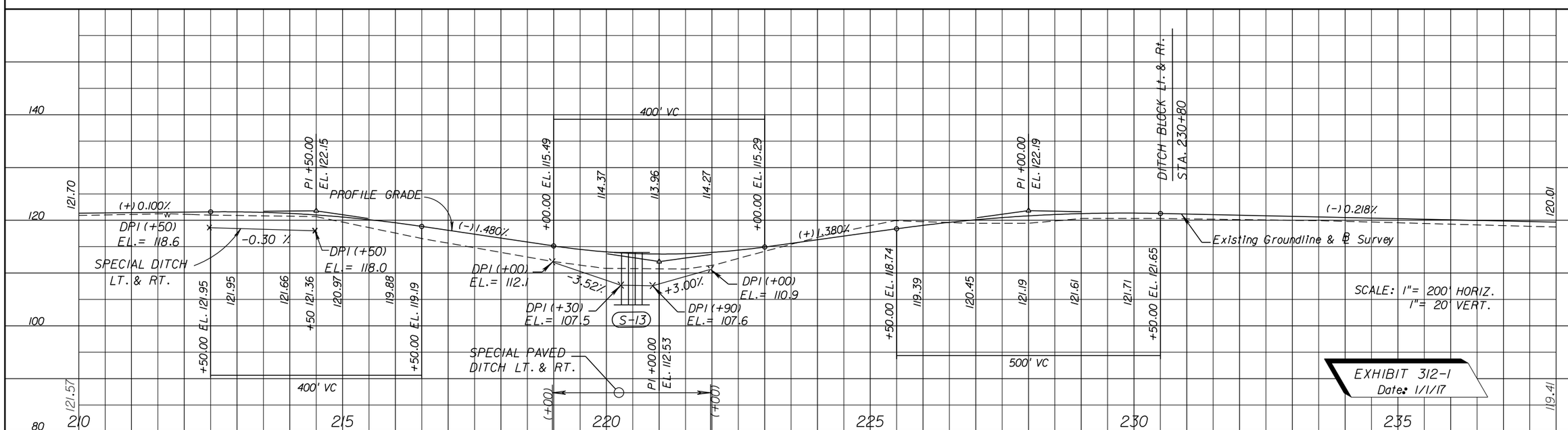
Show special gutter grades in profile for cases where the gutter grades are not controlled by the typical section and no "special profiles" are included in the plans set. Prolongations of gutter profile grades across street intersections must be included on plan-profile sheets if an inlet is not provided before the intersection.

Show storm drain pipes, inlets and manholes along the main line. Pipes must be noted by size. Proposed structures may be shown by structure number only. Show flow line elevations for all pipes entering and leaving the structure.

Plot proposed cross drain pipes and culverts at the correct location and elevation of the proposed structure crossing the centerline of construction. Identify cross drains by structure number only.

Where the project overpasses a road or railroad, the cross section template of the road/railroad under the bridge must be shown at the appropriate location in profile. Except for transverse utilities, do not show underground utilities in profile.





REVISIONS			
DATE	DESCRIPTION	DATE	DESCRIPTION

LUKE S. WALKER, P.E.
P.E. LICENSE NUMBER 99991
ROADWAY ENGINEERS, INC.
123 MAIN STREET
TALLAHASSEE, FL 32301
CERTIFICATE OF AUTHORIZATION: 12345

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

ROAD NO.	COUNTY	FINANCIAL PROJECT ID
SR 22	BAY	123456-1-52-01

ROADWAY PLAN-PROFILE

SHEET NO.

10/30/2018 3:16:05 PM

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