1.7 포장구조계산
1) TA법에 의한 포장 설계방법

본 설계법은 교통량과 노하트의 설계 CBR에 따른 목표 TA치 및 총 두께를 만족할 수 있도록 신청된 포장의 각 층 재료에 따른 TA값과 총 두께를 포장구조 설계식에 부합하도록 설계하는 방법임

2) 교통량 구분

설계에 사용하는 교통조건은 대형차 1일 1방향 교통량을 추정하여 다음 표와 같이 5종으로 구분

노선별교통량구분

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<th>교통량 구분</th>
<th>대형차교통량 대/일, 1방향</th>
<th>적용노선</th>
<th>비고</th>
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<td>D</td>
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※ 대형차 : 보통버스, 보통트럭, 대형트럭, 특수자동차

3) TA법에 의한 포장두께

TA와 두께의 목표치

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1.7 포장구조계산

TA와 두께의 목표치

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4) 포장단면

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<tr>
<td>합 계</td>
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</table>

동결지수 및 동결 깊이 산정

- 동결지수는 가장 가까운 측후소인 서울 측후소의 값을 이용함
- 동결기간은 가장 가까운 측후소인 서울 측후소의 값을 이용함
- 사업지구내 계획도로의 최고표고 : 20.0 m
- 서울 측후소의 지반고 : 85.5 m
- 서울 측후소의 동결지수 : 278.9℃일
- 동결기간 : 68일
- 수정 동결 지수 = 동결지수 + 0.5 × 동결기간 × 표고차 / 100

\[ 278.9 - 0.5 \times \frac{85.5 - 20.0}{100} = 256.63℃일 \]
1.7 포장구조계산

■ 최대동결깊이에 따른 설계동결깊이 결정
1) 간편식 (Terada식)
   
   - \( Z = C \sqrt{F} \)

   여기서, \( Z \) = 동결깊이 (cm)
   \( C \) = 정수 (30.2 적용)
   \( F \) = 수정동결지수 183.49 (℃일)

   \[ \begin{array}{c|cccccc}
   \hline
   C & 27.3 & 30.2 & 35.6 & 42.1 & 48.1 & 53.0 \\
   \hline
   F & 0이상 & ~100미만 & 100이상 & ~200미만 & 200이상 & ~300미만 & 300이상 & ~400미만 & 400이상 & ~500미만 & 500이상 & ~600미만 \\
   \hline
   \end{array} \]

   \[ C = 35.6 \]

   \[ \text{최대동결깊이} = 30.2 \sqrt{256.63} \approx 483.79 \text{mm} \]

   \[ = 35.6 \sqrt{(256.63)} = 570.30 \text{mm} \]

   ● 포장설계에서 설계동결깊이는 노상동결관입허용법을 적용하며, 최대동결깊이의 75%를 사용한다.

   따라서, 설계동결깊이 = 483.79 mm \times 75\% = 362.84 mm

   \[ 570.30 \text{mm} \times 75\% = 427.73 \text{mm} \]

■ 포장두께의 산정

• 전체 동결깊이 : 31.0cm

• 역청재료(p) : 5cm(표층) + 10cm(기층) = 15.0cm

• 비동결 재료층의 두께 : 20.0cm(보조기층)+10.0cm(동상방지층)=30.0cm

\.(\text{전체포장두께 : } T=45.0cm\text{는 안정함.})
## 1.7 포장구조계산

### 4) 20년 동 필치수

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<th>지역</th>
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5) 20년 동결지수선도