Adoption of the Eurocodes in Croatia

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Croatian Standards Institute (HZN)
2005-07-01

National Standards Body – public institution

- Law on Standardization (NN 163/2003)
Adoption and Implementation of the Eurocodes – Croatian approach

Agreement on Cooperation in the Process of Adoption of the Eurocodes as Croatian Standards

signed on 2007-09-05 by
Ministry of Construction and Physical Planning,
Croatian Chamber of Civil Engineers
and Croatian Standards Institute
Adoption and Implementation of the Eurocodes – Croatian approach (2)

Agreement on Cooperation in the Process of Adoption of the Eurocodes as Croatian Standards

Work Plan on Adoption of the Eurocodes as Croatian Standards for the Period 2008 – 2010

annual bilateral contracts
## Work Plan on Adoption of the Eurocodes (part of) (1)

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
| 9 | godina | 2007 |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 10 | mjesec |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 11 | proj. mjesec |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 12 | početak/i zakočenje projekta |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 13 | provedba projekta |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 14 | upravljanje projekta |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 15 | sastanak operativnog tima (OST) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 16 | godina nadzornog odbora (NO) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 17 | izvještavanje |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 18 | završni sastanak |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 19 | planiranje za tekuću godinu (PG) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 20 | prihvaćanje plana za tekuću godinu (NO) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 21 | ugovaranje za tekuću godinu (HZN-MZOPUC, HZN-RIG) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 22 | praćenje |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 23 | Eurokod 0 (EN 1990) Odbor T0548, Konstrukcijski europski kodovi |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 24 | prijedlog (prijedlog 1990 i 1990/A) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 25 | lektoranj (HZN) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 26 | recenzija i prihvaćanje prijedloga (skupina za prijedlog + TO) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 27 | utvrđivanje postupka za određivanje NDP (TO + skupina za NDP) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 28 | provedba postupka određivanja NDP (eksponent) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 29 | utvrđivanje NDP (TO + skupina za NDP) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 30 | utvrđivanje teksta za javnu raspravu (TO) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 31 | upućivanje na javnu raspravu (TO) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 32 | javna rasprava (HZN) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 33 | obrada i rasprava primjedbi (TO) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 34 | finalizacija teksta (HZN + Sigmund, Amić) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 35 | objava u glasilu HZN (HZN) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 36 | Eurokod 1 (EN 1991) Odbor T0548/P01, Konstrukcijski europski kodovi |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 37 | prijedlog i lektoranj (prijedlog i HZN) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 38 | recenzija i prihvaćanje prijedloga (skupina za prijedlog + P01) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 39 | utvrđivanje postupka za određivanje NDP (P01 + skupina za NDP) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| 40 | provedba postupka za određivanje NDP (eksponent) |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
Work Plan on Adoption of the Eurocodes (2)

- Work Plan was not realized on time due to many various reasons:
  - lack of awareness at the high level
  - insufficient capacity (human resources)
  - reaching consensus on some NDPs
  - time consuming work on new maps for actions on structures and seismic impact

- finalization was postponed or extended several times
HZN/TO 548, *Structural Eurocodes* (1)

- NMC to CEN/TC 250
- established 2006-11-28
- chairman: Prof. Ivica Džeba PhD., CEng.
  (predecessors: Prof. V. Simović PhD., CEng.
   Prof. D. Aničić PhD., CEng.)
- structure based on the structure of CEN/TC 250
  - 9 SCs
  - 3 WGks
- conditions for organized and planned work on all Eurocodes within one TC provided
- decisions:
  - to be adopted in original (en) immediately
  - to be followed by translation into Croatian
  - NAs – to be published as separate documents
HZN/TO 548, Structural Eurocodes (2) SCs

- **PO 1, Eurocode 1: Actions on structures**
- **PO 2, Eurocode 2: Design of concrete structures**
- **PO 3, Eurocode 3: Design of steel structures**
- **PO 4, Eurocode 4: Design of composite steel and concrete structures**
- **PO 5, Eurocode 5: Design of timber structures**
- **PO 6, Eurocode 6: Design of masonry structures**
- **PO 7, Eurocode 7: Geotechnical design**
- **PO 8, Eurocode 8: Earthquake resistance design of structures**
- **PO 9, Eurocode 9: Design of aluminium structures**
HZN/TO 548, *Structural Eurocodes* (3) WGs

- RS 1, *Translation*
- RS 2, *National Annexes*
- RS 3, *Eurocode 0*
Eurocodes – ENs in Croatia (1)

1st edition

- HRN EN 1990:2008 en
- HRN EN 1991:2008 en
- HRN EN 1992:2008 en
- HRN EN 1993:2008 en
- HRN EN 1994:2008 en
- HRN EN 1995:2008 en
- HRN EN 1996:2008 en
- HRN EN 1997:2008 en
- HRN EN 1998:2008 en
- HRN EN 1999:2008 en

(with all relating amendments and corrigenda)
Eurocodes – ENs in Croatia (2)
2nd edition

- HRN EN 1990:2011 hr
- HRN EN 1991:2012 hr
- HRN EN 1992:2013 hr
- HRN EN 1993 hr (in preparation)
- HRN EN 1994:2012 hr
- HRN EN 1995:2013 hr
- HRN EN 1996:2012 hr
- HRN EN 1997:2012 hr
- HRN EN 1998:2011 hr
- HRN EN 1999 hr (in preparation)
  (consolidated with published amendments and corrigenda)
Eurocodes – ENs in Croatia (3) (Possible) problems

- hr versions – consolidated with published amendments and corrigenda
- new amendments and corrigenda published after publication of consolidated versions – "never ending story"
- potential to carry out that work on time (translation, consolidation, possible modifications of NAs)
- publication of separate documents adopting new As & ACs – not transparent enough?
Eurocodes – NAs in Croatia (1)

- HRN EN 1990:2011/NA:2011 hr
- HRN EN 1991:2012/NA:2012 hr
- HRN EN 1992:2013/NA:2013 hr
- HRN EN 1993:2008/NA:2013 hr
- HRN EN 1994:2012/NA:2012 hr
- HRN EN 1995:2013/NA:2013 hr
- HRN EN 1996:2012/NA:2012 hr
- HRN EN 1997:2012/NA:2012 hr
- HRN EN 1999:2008/NA:2013 hr

(translation into English in preparation)
Eurocodes – NAs in Croatia (2)

- new maps for actions on structures:
  - snow load map (HRN EN 1991-1-3/NA)
  - basic wind velocity map (HRN EN 1991-1-4/NA)
  - air temperature maps (HRN EN 1991-1-5/NA)
- new maps for seismic impact – reference peak ground acceleration:
  - reference return period 475 years
  - reference return period 95 years
Eurocodes – NAs in Croatia

Proportion of accepted recommended values of NDPs

<table>
<thead>
<tr>
<th>Eurocode</th>
<th>NDPs accepted [%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>EN 1990</td>
<td>74</td>
</tr>
<tr>
<td>EN 1991</td>
<td>94</td>
</tr>
<tr>
<td>EN 1992</td>
<td>98</td>
</tr>
<tr>
<td>EN 1993</td>
<td>95</td>
</tr>
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<td>EN 1994</td>
<td>78</td>
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<td>EN 1995</td>
<td>63</td>
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<tr>
<td>EN 1996</td>
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<td>EN 1997</td>
<td>48</td>
</tr>
<tr>
<td>EN 1998</td>
<td>70</td>
</tr>
<tr>
<td>EN 1999</td>
<td>100</td>
</tr>
<tr>
<td><strong>Average</strong></td>
<td><strong>~ 80</strong></td>
</tr>
</tbody>
</table>
Eurocodes – Implementation in Croatia

- implementation ensured through technical regulations
- technical regulations prepared by the Ministry of Construction and Physical Planning
- 6 regulations – one for each type of structures (concrete, steel, composite steel and concrete, timber, masonry & aluminium)
- 1 unique regulation for all types of structures planned
Eurocodes – Training, Guidelines & Training Materials

- no common programme of seminars and training on the state level
- no official information about seminars and trainings
- seminars and trainings – result of efforts of single authors and/or organisations
- university lectures and books based on Eurocodes
Thank you very much for your attention!